

SCIENCE AND TECHNOLOGY
COMMITTEE

First Report

THE EFFICIENCY UNIT SCRUTINY
OF PUBLIC SECTOR RESEARCH
ESTABLISHMENTS

VOL II

Minutes of Evidence and Appendices .

*Ordered by The House of Commons to be printed
16th November 1994*

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SCIENCE AND TECHNOLOGY
COMMITTEE

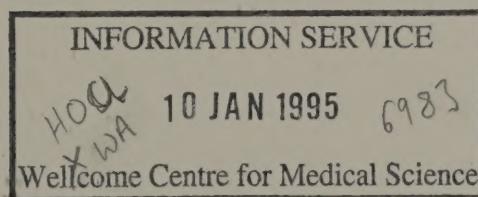
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The Science and Technology Committee is appointed under Standing Order No 130 to examine the expenditure, administration and policy of the Office of Science and Technology and associated public bodies.

The Committee consists of 11 Members. It has a quorum of three. Unless the House otherwise orders, all Members nominated to the Committee continue to be members of it for the remainder of the Parliament.

The Committee has power:

- (a) to send for persons, papers and records, to sit notwithstanding any adjournment of the House, to adjourn from place to place, and to report from time to time;
- (b) to appoint specialist advisers either to supply information which is not readily available or to elucidate matters of complexity within the Committee's order of reference;
- (c) to communicate to any other such committee and to the Committee of Public Accounts its evidence and any other documents relating to matters of common interest; and
- (d) to meet concurrently with any other such committee for the purposes of deliberating, taking evidence, or considering draft reports.

The following were nominated Members of the Committee on 13 July 1992:

Mr Spencer Batiste	Sir Giles Shaw
Dr Jeremy Bray	Sir Trevor Skeet
Mr Malcolm Bruce	Dr Gavin Strang
Mrs Anne Campbell	Sir Gerard Vaughan
Cheryl Gillan	Dr Alan W Williams
Mr William Powell	

Sir Giles Shaw was elected Chairman on 15 July 1992.

On 9 November 1992 Mr Malcolm Bruce was discharged and Mr Andrew Miller added to the Committee.

On 16 November 1992 Dr Gavin Strang was discharged and Dr Lynne Jones added to the Committee.

LIST OF WITNESSES

Wednesday 13 July 1994

The Signers and Testifiers
to the Minutes of Evidence

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LIST OF MEMORANDA REPORTED TO THE HOUSE BUT NOT PRINTED

We have received copies of responses to the consultation on the Scrutiny Report, some of which were also submitted directly to us as memoranda and have been reported to the House. To save printing costs these have not been printed but copies have been placed in the House of Commons Library where they may be inspected by Members. Other copies are in the Record Office, House of Lords, and are available to the public for inspection. Requests for inspection should be addressed to the Record Office, House of Lords, London, SW1. (Tel. 071-219 3074). Hours of inspection are from 9.30 am to 5.30 pm on Mondays to Fridays.

Documents from the following have been so deposited:

The University of Liverpool
Farm Animal Welfare Council (FAWC)
Save British Science
Central Region Fire Brigade
The British Grassland Society
James Finlay Bank Ltd
Dr Helen Lawton Smith, School of Geography, University of Oxford
Staff of the Proudman Oceanographic Laboratory
Forest Economic Advisory Services
De Montfort University
King's College London
Mr N. T. Peperell, Managing Director of RIBA Indemnity Research Ltd
GA Construction Ltd
Dr M W Elves of Glaxo Holdings plc
Home Grown Timber Advisory Committee
Institute of Biology
Isle of Man Department of Agriculture, Fisheries and Forestry
Horticultural Development Council
The Apple and Pear Research Council
The Forestry Industry Committee of Great Britain
W. B. Banks, Professor of Forest Sciences, University College of North Wales
University of Bristol
Edinburgh Woodland Services
Confederation of Associations of Specialist Engineering Contractors
The Royal Society of Edinburgh
The Committee of Vice-Chancellors and Principals of the Universities of the United Kingdom
The Royal Society
Edinburgh University

MINUTES OF EVIDENCE

TAKEN BEFORE THE SCIENCE AND TECHNOLOGY COMMITTEE

WEDNESDAY 13 JULY 1994

Members present:

Sir Giles Shaw, in the Chair

Dr Jeremy Bray
Mrs Anne Campbell
Mr Andrew Miller
Mr William Powell

Sir Trevor Skeet
Sir Gerard Vaughan
Dr Alan W Williams

Examination of witnesses

SIR PETER LEVENE KBE, The Prime Minister's Adviser on Efficiency and Effectiveness and MRS LYNDY KYLE, Scrutiny Team Leader, examined.

Chairman

1. Good afternoon. First of all, thank you, Sir Peter and Mrs Kyle, for coming. I know we have had a series of on-off dates pending the publication of the Scrutiny and it is very kind of you to come within 48 hours of its publication. This poses us with a problem in as much as we have had not very much time to consider the basis for questioning you today, but I know full well that all will become exposed during the meeting and I think, in any event, you will want to make an opening statement to draw attention to some of the things you consider important in the light of your Scrutiny. We will be delighted if you would care to do this.

(*Sir Peter Levene*) Thank you very much, Chairman, Ladies and Gentlemen. As you said, Chairman, this report was only published a couple of days ago and so we would certainly not expect the Committee to have digested it fully. I think the most important thing to say about this report, at the outset, is that it is a report which Lynda Kyle and her team produced, and contains a number of recommendations. The Government has taken no view on it yet and has announced, as I think was common knowledge beforehand, that there will be a formal consultation period. So I think that, in particular, coming to this Committee and wanting to comment on it, our first priority is to listen to you and your comments; and, of course, any future comments that you would want to make, after you have had an opportunity of studying the report further, so that all those comments can be garnered together. They will be garnered together by the Office of Science and Technology and you have in the report the contact point to which those points can go forward. Anybody can put those points forward or, of course, we would be very happy to forward them as well. So, as I say, our prime task this afternoon is to act as a listening post. I will try and give you a little background as to how the report was set up and what it was intended to achieve, and Mrs Kyle, who actually headed the team who wrote the report, will be happy, I know, to answer any points of detail in it, to try to explain how the report reached their different recommendations. The Scrutiny has, as its origins, last year's White Paper, which realised our potential, and a keen theme of which was to ensure best value for money in the Government expenditure on science, engineering and technology. The White Paper itself reaffirmed the Government's commitment to its role as the main funder of basic

research, reflected in the provision of more than £2 billion in 1994/95 through the research councils and higher education funding councils. The White Paper also announced that there would be a Scrutiny, which is the one we are talking about today, for the public sector research establishments, looking at privatisation, rationalisation and different ownership options. The Scrutiny team, which comprised officials from a number of departments, have now completed their work and the report, which is before you, is the result of that work. The Scrutiny had a wide-ranging remit, covering organisational ownership matters, and it makes a correspondingly wide range of proposals. These include the identifications of two possible candidates for privatisation, in addition to those already identified by Departments. They also include possible options for bringing together a number of the establishments into new organisational groupings, based on either market sector or on jobs, with a view to achieving greater flexibility in the use of resources and potential savings in overheads. The key thing underlying this Scrutiny is best value for money; the need to try to ensure that Government expenditure, wherever possible, is devoted to output and not to overheads. In other words, the best possible science for the money that is available. As I mentioned before, I would like to stress again that publication does not mean that the Government must take any decisions at all yet on the recommendations in the report. It is a report to Government. The Government is very keen to ensure that all interested parties can contribute to the decision making process and as the Chancellor of the Duchy of Lancaster announced, the formal consultation period, which I mentioned earlier, runs until 11 November. Only after that process will conclusions be reached on the way forward. It will be particularly important clearly to have the views of this Committee so we welcome the opportunity today to have your immediate reactions, and we also welcome the opportunity to clarify any points you may wish to raise on the Scrutiny itself. But the publication of this report is only the end of the first phase. The second consultative phase, which we are now starting, is just as much part of the process as the report itself.

2. Obviously we understand that the consultation process is now on and it will not surprise you to know that the Chancellor will be invited to come and see us, probably late in October when that consultation is not completed, but clearly a lot of views have been

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SIR PETER LEVENE AND MRS LYNDA KYLE

[Continued]

[Chairman *Cont*]

expressed. The Committee will also be letting it be known that we are conducting our own research into your report and we shall invite comments through us as well. We take your point that the consultation period is almost as important as the report itself. However, we will have questions about the detail of what you have said and obviously we are seeking to probe some of the background views that Mrs Kyle came across in leading the team, so I hope you will not find it difficult to answer the questions the Committee would like to ask. If I could start off, we would be quite interested to know the criteria by which the original 53 organisations included in the Scrutiny were selected. There are a very large number, but I believe, for example, that in the ambit of the Medical Research Council there is something like five selected, but they have 46 institutes which they look after. It would be helpful to know the criteria for the selection of those to be examined and what guided you in doing that focus.

(*Mrs Kyle*) The original focus of the Scrutiny—the initial focus of the Scrutiny—was on Government research establishments, those parented by Government departments. This was as a result of the fact that at least part of the initial Scrutiny came from the report prepared as background for last year's White Paper, which made some recommendations on the organisational arrangements of those establishments. In addition, the Scrutiny looked at related laboratories in the research council sector. "Related", in that sense, meant having dealings with Government departments—having a customer relationship with the departments—and also having a similarity in the work that was undertaken in those establishments. So some of the potential for rationalisation came from the similarity of capabilities.

3. Broadly, though, you were following the Government's own parentage of the organisations and with that, looking at overlap within those establishments which would appear to be active together, or could be brought together?

(*Mrs Kyle*) Yes.

4. Those were your main criteria?

(*Mrs Kyle*) Yes.

5. Have you any comment on that, Sir Peter?

(*Sir Peter Levene*) No.

Mr Miller

6. Sticking to the question of the criteria that were used, Sir Peter, you used the phrase "seeking best possible science for the money available", and a very sensible phrase it is. Do you know why that was not included in the terms of reference of the document itself because it would seem to me that that is a perfectly sensible question to ask, but it was not actually included in the terms of reference?

(*Sir Peter Levene*) I think it was certainly implicit that that was always in our minds. The concern is this: that, as you will know, there are limited resources available for everything. One wants to try to ensure that the money that is spent is spent indeed on science and on achieving that and as little as possible on administration and overheads.

7. You say it was implicit and maybe I can accept that, but the explicit point of the terms of reference is the issue relating to privatisation. Do you not think it would have been helpful in terms of the interests of Great Britain plc to have asked the question, "What is the best possible way of undertaking the science for the money available?"?

(*Sir Peter Levene*) If I quote from the terms of reference, one of the clauses here says, "to consider whether changes to current ownership and financing arrangements for establishments would lead to more effective operation in the open market and better value for money". So that is, I think, where I would say it is implicit.

Sir Trevor Skeet

8. Sir Peter, I am interested in three organisations in MAFF of course. I see you have selected eight bodies. Could you not have selected more there in order to get savings and of the AFRC, which has been cut back very, very severely over the years, you have selected seven, and MRC five? Would it not have been possible if you were going for savings in a big way to have included a number of those?

(*Sir Peter Levene*) If I may, I will ask Lynda Kyle to answer that because she is responsible for the selection and she may be able to explain that to you.

(*Mrs Kyle*) We looked at all establishments of a reasonable size other than those which are very tiny. There are certainly many RC units, for example, the mammal unit which is minuscule, which we did not include, but we included all establishments of a reasonable size belonging to government departments and those of the Research Council sector with a related remit.

9. Is it your intention to have a second bite at this probably later on and then to include other groupings as well?

(*Sir Peter Levene*) I think that will depend on clearly what happens with this, but, if I may say so, with respect, I think we have plenty to get on with. As Lynda has said, we have selected the ones which we think may make the most immediate progress.

Dr Bray

10. Having said that, the establishments that come to mind which most squarely fall within the criteria are of course the defence research establishments. They are not excluded in the terms of reference, but why were they not included?

(*Sir Peter Levene*) Well, in fact there had already been a lot of rationalisation of the MoD establishments in the Defence Research Agency which is going ahead at present and the defence establishments were not included in the study that Mrs Kyle has undertaken.

11. There was indeed the report of the Reece Committee on the defence research establishments which was a very thorough and conclusive report which I think the Chairman and others felt was not acted on by government and yet had it been addressed in the meeting in which this work has been done, it might well have produced a conclusion.

(*Sir Peter Levene*) Well, I cannot answer that simply on the basis that this study was to look at the civil research establishments.

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SIR PETER LEVENE AND MRS LYNDY KYLE

[Continued]

[Dr Bray *Cont*]

Chairman: That is a matter we had better pursue with the Secretary of State.

Dr Bray

12. And that was firmly said to you by the Minister?

(Sir Peter Levene) Yes.

Mrs Campbell

13. Sir Peter, I am interested in just exploring with you how the decisions of the DTI and the Department of Transport on the privatisations of their laboratories were co-ordinated with the work of the Efficiency Unit and in particular one specific question which is that if the criteria for privatisation, which you have kindly set out in appendix J, had been applied in the case of the National Engineering Laboratory, the Laboratory of the Government Chemist, AEA Technology and the Transport Research Laboratory, would the Departments concerned still have decided to privatise them?

(Sir Peter Levene) I think, firstly, the decisions which had already been made in the DTI and the Department of Transport we took as given. In other words, those were there and we had to work in conjunction with them, so we were not asked, if you like, to interfere with what was already being carried out and had been taken as decisions in those departments. On the second part of your question, perhaps I will ask Lynda to answer that.

(Mrs Kyle) Yes, simply to say that we took into account what was happening in the Department of Trade and Industry and in the Department of Transport in the way that they were reviewing their labs on a very detailed departmental basis in looking at the criteria and seeing what models might be appropriate for other research establishments.

14. So you were taking that, if you like, as a sort of constraint on the study rather than something that was incorporated into it? You looked at how far those departments had got and decided you would not change their decisions, but went ahead perhaps looking at the rest with slightly different criteria in mind?

(Mrs Kyle) There was a two-way process of transparency between our Scrutiny and the reviews going on in departments. We took a number of things into account when we were trying to think of the criteria which might show what establishments were candidates for early privatisation and they included the reviews that were going on at the time. They also included some previous privatisations which had happened in the past when we went to visit the establishments concerned.

15. So you could not answer specifically the question that I asked which is that if the criteria for privatisation which you have set out had been applied in the cases of the laboratories I have mentioned, would they still have been privatised?

(Mrs Kyle) Well, I would not see any dichotomy there.

16. Can I go on and ask again another co-ordination question and that is; what co-ordination has there been between your review and that of Sir

John Cadogan's zero-based review of the research councils? How has that been co-ordinated?

(Mrs Kyle) We went to see Sir John Cadogan at an early stage and talked in general terms about what we were up to and what he was up to. That review, I think, had a different timescale from our own. We were looking across the board between departments and research councils.

17. It seems to me that there are so many initiatives going on at the same time—

(Mrs Kyle) There are.

18.—that that must be quite confusing for the people who are carrying them out and also extremely, shall I say, disturbing for the people who are being reviewed, particularly when one review is coming after another. Did you find any evidence of that?

(Mrs Kyle) There was certainly some concern, I think. People were anxious for a conclusion, for a view to be taken on the future of establishments. That is one of the reasons why there was a need to complete the first stages of the process in the standard Efficiency Unit time because this uncertainty, I think, was something which was not welcome to establishments and was damaging to staff morale in a sense.

Chairman

19. Was it known at the time, Mrs Kyle, that the report would be subject to quite a long consultation period after publication?

(Mrs Kyle) There is always a process of deliberation following Efficiency Unit reports.

20. So it would have been assumed?

(Mrs Kyle) Yes, it has always been understood that there would be a process following publication of the report.

(Sir Peter Levene) If I might just add, Chairman, traditionally the Efficiency Unit from the time it was first set up has carried out a large number of efficiency scrutinies, but in almost every case, these have been single-department scrutinies; a scrutiny which is recommended by the Secretary of State for the department concerned, discussed with the Prime Minister's efficiency adviser, and they agree that is a worth-while topic. What normally happens in those cases is that the department concerned will then designate officials from within the department to carry out the scrutiny, but those are usually officials who come from a different part of the department. In other words, who have an objective view. In the last couple of years, since I took over as Efficiency Adviser, we found that there were a number of topics arising that focused on more than one department, so we have set up a small number but quite significant topics of these multi-departmental scrutinies. To a certain extent, we are feeling our way as we go along. With this one in particular, it was made quite clear that there was a lot of interest in it—and in fact, I had an informal meeting in this House in the spring when it was made very clear to me that a lot of people had strong views on it—so it is very important for us to take those into account. So there we have a slight difficulty of trying to square the circle: listening to what everybody has to say, trying to take that into account, putting that into the recommendations which the Government may or may not finally

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SIR PETER LEVENE AND MRS LYNDY KYLE

[Continued]

[Chairman *Cont*]

choose to adopt, but, at the same time, meeting the point which Mrs Campbell mentioned, of not putting too much concern into people's minds who are in some kind of limbo, not knowing what is going to happen to those establishments. So it is not an easy process. Therefore we have one group of people who are asking us to finish as quickly as possible, but almost the same group of people saying, "Yes, but don't go too quickly because we want you to hear what we have to say." That is the dilemma to be faced.

Chairman: Clearly understood.

Sir Gerard Vaughan

21. Sir Peter and Mrs Kyle, may I ask you about the research institutes and the Government research establishments? In your report you very carefully distinguish between the two, with a different emphasis on the two. I am correct in that, am I not? The research institutes are more inclined to basic research and, therefore, possibly more commercial research in their approach: presumably, also, with different approaches to management in the way they operate. Yet when you come to look at the rationalisation, you appear to have lumped them both together and adopted exactly the same approach. Is that a fair comment? I find that rather strange I must admit.

(*Mrs Kyle*) The establishments, in one way, are very separate—the Government research establishments from the research council institutes. Traditionally there has been this divide between them in the way they are viewed. They do, however, a spectrum of work—ranging from work which is very intricately involved in the policy and operational activities of Government departments, to the other end of the spectrum which is very basic research—and in the middle, an area of high research activity where the divide is not enormous between the two types of establishment. So although the emphasis is different, and although they cover different elements of the spectrum, there are grounds for saying that some rationalisation could be done between the two types of establishments.

22. Clearly I agree there is a spectrum of activities, but have you distinguished between the two? You have adopted exactly the same approach towards both kinds, have you not? They have different kinds of life-cycles and different timings. Do you think this is a proper way to approach this? A satisfactory way?

(*Mrs Kyle*) I very much agree that basic research has a completely different life-cycle—a different set of timings—but there is a good proportion of work done in the centre of the spectrum, where the timing of the life-cycle is very similar in the work done in research establishments of the research council institutes and those of other Government departments. There is a good proportion of work done by BBSRC institutes, for example, which is for the Ministry of Agriculture and done to Ministry of Agriculture specifications.

23. May I ask you? Have you had major objections to putting them together; to approaching it in this way?

(*Mrs Kyle*) Objections?

24. Yes, major objections.

(*Mrs Kyle*) Being expressed?

25. Yes.

(*Mrs Kyle*) We outlined in one of the annexes to the report the various perspectives that there are on what the best organisational structures should be. Certainly there are elements in some of those perspectives which argue that the two types of establishments should be kept separate. There are counter-arguments—for example, in Scotland—where the two types of establishments are, in fact, parented by one Government department.

Mr Powell

26. To what extent does the problem arise from the fact that departmental research institutes during the 1980s were discouraged from becoming commercial or undertaking market work with industry?

(*Mrs Kyle*) It is certainly true they were discounted in undertaking near market research. That will have had an effect on the patterns of expenditure with departments. I am not sure that it has a direct impact upon how we might restructure the two types of establishments.

27. This has not really played any part in the formulation of your report?

(*Mrs Kyle*) It was something which we were aware of as part of the background of the report—absolutely.

Sir Trevor Skeet

28. Sir Peter, what is the extent of overcapacity in the public sector research establishments, subject to your review?

(*Sir Peter Levene*) I cannot put a figure on it—I do not know whether Mrs Kyle can—but part of the rationale behind the report was to try and find out to what extent there was any overcapacity generally and to see where there was duplication which could be avoided; then, to try to put those together, provided that it made sense to do so. I do not know if we have actually got a specific number at this stage.

(*Mrs Kyle*) No. We saw some evidence of overcapacity in the shape of under-utilised buildings, in particular. What we were not able to do—and what would have required longer and rather more detailed exercises—would have been to put a figure on that, the current overcapacity. That would have had to take into account not only the Government as a customer or as a funder of research, but also the European Community potential funders or customers in the private sector. So we did not attempt, in the end, to put a figure on it.

29. My original line of questioning to you was to try and tempt you to cast the net a bit wider and include more groups. I want to put to you the reverse argument now. Particularly in view of the fact that the AFRC has been diminished over the last ten years—phased effectively indeed down to 3,500—this rationalisation was necessary, there had been a course of it. However, why are you again now going ahead with this review? Was it not enough?

(*Sir Peter Levene*) I think you must take into account the fact that this started off in the original White Paper, on the basis that we were looking specifically at research establishments of

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SIR PETER LEVENE AND MRS LYnda KYLE

[Continued]

[Sir Trevor Skeet *Cont*]

Government departments. We were not looking at research councils. The object of the exercise was to determine two things. Firstly, whether there was duplication, whether there could be rationalisation and whether, as I suggested earlier, more science could be got from the money by trying to run things on a more economic basis. Secondly, to try to find out—if you were going to take a specific department and take their own establishments away from them—what the ownership should then be. Should they all then be in one giant Government civil research authority? Added to that subsequently, was the question of the research councils. I would not like you to get the idea that the tail was wagging the dog. Research councils came after the initial concept, which was to look at the establishments directly related to Government departments.

30. It is a question, I suppose, of getting a balance on these particular cases, but the Building Research Establishment has been, of course, examined about five times in the past 15 years. Would this have any impact upon the morale of the staff?

(*Sir Peter Levene*) I think, as I said earlier, you can look at any of these things and you can go on examining them today. On the other hand, there is a point, which has been raised here, in looking from the original White Paper, as to whether it makes better sense—whether the resources which are spent on science, can be better deployed in ensuring that there is not duplication and ensuring that it is put about out in the right way. I can only quote the comments made along time ago that it is better to be the reorganiser than the reorganisee.

Mr Williams

31. Can I just come in briefly and say that in terms of the morale of the people working in the establishments when the Department is up for review or the Agricultural Research Council, when jobs have been so badly cut already, what effect has this had on the morale of the people?

(*Sir Peter Levene*) First of all, I think we must recall that we are dealing with a group of very capable and intelligent people. They know that today nothing just goes on as it has done for ever, but we are, and I do not want to keep repeating myself, but we are faced with a situation that having made a decision that the situation needs to be looked at, you are then faced with this terrible problem where either you say, "Right, we have looked at it and three months later here are the answers of what we are going to do. We have taken a decision", or do you, as in this case, say, "This is a complex issue. It is difficult. A lot of people's views have to be taken into account. The staff themselves of course have to be taken into account and we do need to consult all those who have a view"? As I say, when I was questioned about this back in the spring, it was made very clear to me that a lot of people have very strong views on this and this is, as I have already mentioned, a two-stage process and we are just about to go into the second stage. What the Government will decide to do at the end of the day will be very much conditioned by what comes out in the consultation process. Now, that is, agreed, difficult for the staff, but, on the other hand, in some cases it might put them into a better situation. Everybody recognises that their morale is important,

they are all doing important jobs, but you cannot look at an issue of this kind in secret and nobody wants to do so. It is an open process and everybody will be consulted. To the extent that that creates uncertainty, yes, I am afraid it is the case, but we have to try and explain this to people and explain what we are doing to try and ensure that they recognise that everyone will be fully consulted and their views will be properly taken into account. I do not see any other way of doing it.

Chairman

32. Were you surprised or disappointed that the team only found one PSRE which it could recommend for early privatisation?

(*Sir Peter Levene*) I was neither surprised nor disappointed, Chairman. Our remit of the team was to come up with recommendations for the best way for these establishments and research councils to be managed in the future, including privatisation as one of the options, so these are their recommendations. I did not have any particular pre-ordained view on it. That is their view and they have done a very thorough job and we hear what they say.

Mrs Campbell

33. I just wanted to follow up the Chairman's question, Sir Peter, because I think the one we are talking about is ADAS. Am I correct in this case?

(*Sir Peter Levene*) I do not know.

34. Well, it is the one PSRE which you could recommend for early privatisation so I assume it is ADAS. One of the things that ADAS does so well or has in the past is to give free advice to farmers about agricultural practices and the only sort of advice that farmers now get which is free tends to come from the agri-chemical companies and I wonder if that is a consideration which you actually took into account when you were looking at the possibility of privatisation of ADAS because it seems to me that there are other implications quite apart from the fact of the cost of doing that research and development which ADAS does at the moment.

(*Mrs Kyle*) ADAS of course now is able to charge for its services and does charge for its services. The question of impartiality of advice, which I suspect is at the heart of your question—

35. Yes.

(*Mrs Kyle*)—is one that does arise in the context of a number of these establishments, but it is possible for advice to be impartial and independent within the private sector as it is within the public sector.

Mr Miller

36. Following on from the ADAS situation, whilst the Milk Marketing Board was in place in its previous guise, most matters affecting that particular industry, the science of that particular industry, were dealt with through their own laboratories. Now that we are in this transition through to Milk Mark, what considerations did you make regarding the milk industry in coming to the conclusion that ADAS was ready for privatisation? Was it focused on them?

(*Mrs Kyle*) What we looked at primarily in deciding whether an establishment met our criteria

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SIR PETER LEVENE AND MRS LYNDA KYLE

[Continued]

[Mr Miller *Cont*]

for being a candidate for early privatisation was what the establishment did and the shape it was in essentially. ADAS does activity which has a number of parallels in the private sector and it is part-way down the path into being the sort of shape which will enable it to thrive in the private sector and we saw on that basis that it was a relatively good candidate for early privatisation.

37. You did not look at things happening around it that genuinely impinge upon it?

(Mrs Kyle) I think that the detailed analysis will be something which would have to be done at a separate stage. All the privatisations require very detailed analysis.

38. In which way did ADAS not meet the criteria?

(Mrs Kyle) ADAS are not yet in a position where they are recovering all their costs. They have an annual deficit to an extent because they are not yet charging fully for the activity, the advice which in the past they have given as a free good. So this is one difficult area which will have to be addressed.

Mrs Campbell

39. Can I just come in on that to clarify my previous question and I apologise if you did not quite understand it, Mrs Kyle, but I do not think you really got the point of what I was saying. My question is that if ADAS do become fully commercialised under privatisation, they will obviously have to charge more for their services and that is going to leave farmers with a choice of whether they go to ADAS and pay for their advice or whether they go to the agri-chemical companies and get their advice free. Now, I am concerned about the effect that that will have on British farming and I wonder whether this is one of the considerations which has been taken into account when you have been looking at privatisation.

(Mrs Kyle) I think it would be a matter for ADAS to determine whether they would charge more for their services or provide services in a different way. That would be a commercial decision for a privatised company.

Mrs Campbell: Someone has to pay for them at the end of the day.

Chairman: They do charge for some services.

Mrs Campbell

40. They do, yes, but they would have to charge more.

(Sir Peter Levene) I would just make the point that I do not think one should take as given that if an organisation were privatised it would necessarily have to charge more for its services. It might be run on the basis that it actually cost them less to do that. I think that would remain to be seen and that would be one of the factors to be taken into account if it were.

41. Sir Peter, what you are saying at the moment is that ADAS are running at a deficit and that presumably if they were a privatised company, they would no longer be able to run at a deficit, otherwise they would go out of business. It seems to follow from that that if they are not running at a deficit, the

only way they can overcome that is by charging more for their services.

(Sir Peter Levene) I do not know that I entirely follow that logic.

Dr Bray

42. Are the criteria for privatisation a very helpful, logical way to look at the problems of management and if you think about the actual establishments and the job they do, for example, the Rutherford Laboratory, the Government is perfectly prepared to see that fail in the sense that any very good research might fail, and if you take the Gas Turbine Research Establishment, again the Government is probably perfectly prepared to see that fail, but a previous government would not allow Rolls Royce to fail, although that was in the private sector.

(Sir Peter Levene) Well, if you are talking, for example, about Pyestock, I had a little to do with that in a previous guise and perhaps I could put it in a rather different way and perhaps this might partially address the point which Mrs Campbell was making. If one is carrying out pure research, one carries this out for a number of different reasons. You may carry it out because a specific customer client has asked for something to be done because they have a commercial requirement for it and they want to know the answer and they pay a fee to obtain that answer. Where I think it is important—and if we go back to the origins of the study—what I would like to try and put across is this: a lot of this work needs to be done because, for example, the Ministry of Agriculture wants to know the answer. But what happens at the present time? They want to know the answer. That question is fed into whichever of their establishments is the most appropriate to carry out the work. It carries out the work and then it provides an answer. That piece of research, in many cases, is not specially costed so you do not know how much it is going to cost. If I go back to the time I spent in the Ministry of Defence, one of the reasons for the setting up of the Defence Research Agency—which of course, is a very large organisation—was precisely to get into the situation which goes back to the Rothschild principles of having the customer/supplier relationship. So you might well have a lot of this work. Dr Bray was saying that the Government might be happy to let a lot of these things fail, but I do not think that is the object of the exercise. The object of the exercise is that where the work needs to be done and a decision is taken for it to be done, it should be carried out in the most cost-effective manner. Certainly within the Ministry of Defence—an area I am familiar with and Mrs Kyle is familiar with—when that work needs to be done, a decision is made as to whether it is either undertaken in a Government research establishment, for which now cost is made, or whether the work is undertaken in a private establishment, for which a cost may also be made. It is not a question of letting them fail. The object of the exercise is to try to ensure that the cost is known before you start and the organisation can then carry it out within that cost. That is why there are different methods—and, as you have heard, privatisation has been recommended in a very limited sphere—and, in other areas, the suggestion has been made that there are different models that can be used

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[Continued]

[Dr Bray *Cont.*]

on the basis of which these establishments can be reorganised.

43. If we take an area of failure where there is a perceived problem which people would dearly love to know the answer to, this is dampness in housing. That has been subject to various research programmes in Government research establishments over the last thirty years and yet there is still a great deal of dampness around. Modern construction methods are still considered vulnerable in some respects. How does the criterion of privatisation apply to a problem like this? I am aware that work has been done on the standards aspect of it, or the construction aspects of it in research.

(*Sir Peter Levene*) I do not think we should concentrate too much on the issue of privatisation, as I have already said.

44. But that is what the report, in fact, does, does it not?

(*Sir Peter Levene*) In what respect?

45. In its terms of reference.

(*Sir Peter Levene*) The terms of reference, on which it is set up, say: "To identify those public research establishments where early privatisation is feasible and desirable and where it is not feasible or desirable to identify the potential for rationalisation." Now, those are the alternatives. I think that is what the report has addressed. It has come up with some recommendations for privatisation and it has come up with recommendations for different methods of organisation. Again, if I can just try and explain on the point you mentioned, for example, the question of dampness: any department may decide that it is worth-while to spend public money on doing research in a certain element of dampness. It might consign that research to a private sector establishment. It might consign it to whatever organisation has been set up as a result of that, if any changes are made, and it will say, "We will place a contract with you for a certain amount of money to carry out this research." As we all know with research, sometimes you find a solution; sometimes you do not. I think the same would apply here.

46. In terms of other forms of organisation that you refer to in terms of research, the organisational forms you looked at are those which are, if you like, much more market-oriented. You do set, as your two models, one of them as a creation of a full market sector, orientated towards the creation of groupings. Those groupings, in fact, look to me more like divisions of the subjects of science, rather than categories of firms.

(*Mrs Kyle*) For "market sector" could have been written "mission orientation". It is not division of science in the sense of physicists versus chemists, but it certainly is a division based on focus, orientation, mission, market sector, as a part of that.

Chairman: Let us turn to something which does connect with universities.

Sir Gerard Vaughan

47. Why should the transfer of a PSRE to a university be regarded as privatising it? You have actually said in your report, "Transfer to universities are a form of change of status not usually thought of

as privatisation, but one which can reasonably be described as such." That seems a slightly extraordinary point of view. I know you have also quoted the Treasury as having the same point of view.

(*Sir Peter Levene*) I know that is what we rely on.

48. Pardon?

(*Sir Peter Levene*) I think that is the authority upon which we relied in that statement.

49. And you defend that as a serious statement?

(*Sir Peter Levene*) I am saying that this is the definition which we are deemed to use.

50. May I ask you then, why is a university likely to manage a PSRE any better commercially than a research institute?

(*Mrs Kyle*) As we say in the report, the idea of bringing together research establishments within universities has a lot to do with synergy rather than to do with management.

Chairman

51. You mean research based, rather than cost?

(*Mrs Kyle*) Absolutely yes, although there are some ways in which universities have access to a wider range of funds than establishments have.

Sir Gerard Vaughan

52. You are asking all the PSREs to set up links with universities but many of them are larger. They are too large to go into university departments.

(*Mrs Kyle*) We thought the potential for transferring institutes—or some elements of institutes—to universities, was something which ought to be routinely explored. But also, as a separate point, so that there should be links between establishments and universities which, in themselves, would be beneficial. That is a separate issue.

53. But they are too big to be absorbed, are they not?

(*Mrs Kyle*) I would have thought a lot of them could be managed, yes.

Chairman

54. Or they could become a separate department.

(*Mrs Kyle*) That could be quite possible, yes.

Chairman: Yes, I see.

Mr Williams

55. But is there not a danger of major distortion of the work of that department, where the university department is trying to get an academic perspective across the disciplines within that field, but if it is sited alongside a research establishment which looks in depth at a particular aspect, then that particular aspect within the department will distort completely the academic balance?

(*Mrs Kyle*) I think whether or not there was a distortion would have to be looked at on a case-by-case basis, but there is, as a general principle, some attraction in considering the potential for transfer measures.

56. But the kind of links that already exist are ones where the synergy is already there. Any university

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[Continued]

[Mr Williams *Cont*]

that has a large research establishment within its campus—or within reasonable proximity—will already be using that surely to maximum advantage?

(Mrs Kyle) There is scope, we would argue, for increasing those links. May I also mention that one of the models that we were very impressed by, within the establishments, was the MRC model of actually setting up the unit within or alongside the university department, and also alongside clinical facilities. So you get the best of both worlds. Each element can draw from the other elements.

Dr Bray

57. But that is alongside. It is very definitely not within. The LMB is in no way in Cambridge University.

(Mrs Kyle) But, for example, the Virology Unit in Edinburgh is part of the Institute of Virology, a joint university and MRC organisation.

58. If you are asking the universities generally to accommodate and manage a big establishment, they could adapt to do so, but is that necessarily the right direction in which to push the universities?

(Sir Peter Levene) I think it is one option. It is not the solution. It is one option which is put forward as a potential solution. I think, as Mrs Kyle has said, it may be appropriate in some cases and not in others certainly, as has been said. If you intend to swamp the university, it would not be a very good idea, but it depends on the size and it depends on the work being carried out.

Mr Williams

59. Could I return very briefly to the original question and that is the university privatised body. Is this not playing for words rather dogmatically? I take universities to mean public bodies rather than private bodies and the transfer of these institutes is just from one public body to another public body, in my understanding of these words.

(Sir Peter Levene) If I may say so, without wanting to debate whether universities are really in the public or the private sector and, as you have heard, the Treasury view is that they deem them to be in the private sector in this respect anyway, but a transfer or a coming together of some of these institutes with a university is one model that can be followed. Now, whether one wants to designate that as being a private sector model or a public sector model, I do not think alters the fact that there is a possibility of doing some of this work with the universities. I do not think we ought to get too concerned at this stage with whether if you do that, you call it privatisation or not. It is either a good idea or it is not.

Chairman

60. The Scrutiny team clearly found that a degree of overlap between organisations was an important criterion in which to suggest that rationalisation could occur. How would you define or did you actually define overlap between the work of the different PSREs, public sector research establishments?

(Mrs Kyle) We saw overlap as being essentially similar work being done, sometimes identical

activities being undertaken, but on different targets and for different purposes.

61. So they were both likely to be looking at the same field of endeavour, but for different reasons or on different aspects of that work?

(Mrs Kyle) Different crops, for example.

62. So it was a fairly simple, but, nevertheless, perfectly viable way of determining whether they were worth amalgamating or rationalising?

(Mrs Kyle) That was a fairly simple definition of overlap, yes, similar work being undertaken for different purposes or on different timings.

Mrs Campbell

63. I am interested that you decided to settle on two options which you recommend for further study. That implies that you saw drawbacks in each one of them and I wondered if you would just tell us what you feel those drawbacks are.

(Mrs Kyle) We did actually in one of the annexes to the report describe what we saw as the advantages and disadvantages of all the options, including the ones that we suggested for further and more detailed consideration. This was annex O.

64. Perhaps I should be more careful in my readership.

(Sir Peter Levene) We should give you a bit more time.

65. Can I just say that it seems to me that one of the difficulties is that if you go for the subject-based option, then you are going to have some teams or some research institutes under the Scottish Office which are not actually in Scotland and may be on the south coast of England, if I am right, and in the geographic option, the second option, you are going to still get a good deal of overlap because I know of overlap between Scottish and English institutes, for example. Am I right?

(Mrs Kyle) These were amongst the advantages and disadvantages that we highlighted for the various options. None of the options was perfect where we said that this was the only possible solution. All of them had pros and cons.

66. Do you not feel that that sort of overlap is actually quite helpful in that it does at least produce competition? I know, having had experience myself of working in an institute which overlapped with one in Scotland, that there was fierce competition between us which actually must have produced a great deal of efficiency at the end of the day.

(Mrs Kyle) Competition is one of the important mechanisms for achieving good value for money. There are other mechanisms which also need looking at and rationalisation, a bringing together under new structures, is one of them.

(Sir Peter Levene) I was going to say that I think whatever you do, there is no way in which you are going to overcome all overlap. There will always be some. Even if you do find a solution which is an option that is decided upon, you still have some degree of overlap and, therefore, some degree of competition. It is a question of how much you are prepared to pay for that and what it is worth at the end of the day.

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[Continued]

Dr Bray

67. How far does the treatment of overlap capture the dynamics of the development of science? Very often institutions are not just born, but they die and they have their ups and downs and very often the reason why an institute takes on a new lease of life is because it has had the migration of profit from some established area which moves into this defunct institute and gives it a totally new lease of life. I can think of that in some of the institutions which you have described as overlapping here. Now, did you say, "Right, well this is an extremely dynamic process of research very much linked to people as well as to the development of ideas and what is the overall pattern of organisation that allows the greatest fertility and effectiveness of that kind of community"? I am sure you are right in saying that the MRC unit is one such, but would you say that the forms that you have put forward really compare with that?

(*Mrs Kyle*) One of the objectives that we were trying to attain in putting forward new possible organisational structures was to increase the flexibility with which resources can be used within organisations. Large numbers of establishments as they exist at present are small and scattered. The potential exists if you are working within larger organisations to move people, to put resources where they are needed at any one time, to change the emphasis of the organisation in the light of developments in science or in the light of changes in customer requirements and demands, so flexibility was certainly an important element of what we were doing here.

Sir Trevor Skeet

68. With all the flexibility that you have got here with the various options which are available to you, and bearing in mind your recommendations, what savings do you hope to be able to produce from this exercise? Have you got a figure that I could study?

(*Mrs Kyle*) We were looking for a potential for savings rather than quantified savings from the effective use of resources.

69. Yes, but can you give me a figure for those?

(*Mrs Kyle*) The putting of a figure on this would be for the later phase, for the chief executives or the directors of rationalisation in the alternative model which we propose to do.

70. If you are trying to secure a big saving, then I dare say a lot of people will come forward and make their own submissions. If it is going to be a tiny amount that you are after, then I would have thought that many people would hold off and not make recommendations. Would it not be sensible to come out with some sort of figure now? Are you after £10 million, for example?

(*Mrs Kyle*) The point I would want to say is that the additional costs in employing the chief executives that we are recommending for the structural models or the directors of rationalisation we are recommending as the alternative answer, as the non-structural organisation, would be relatively small and we are certain that there can be offsetting savings to pay for those salaries in an absolute way.

(*Sir Peter Levene*) I think, to answer your question directly, this is something which we will need to look at because, clearly, if the Government decided to make some radical changes as a result of this report, it will obviously not do so just on the basis of "it seemed like a good idea at the time". It is on the basis of, "We think it is worth-while putting A and B together, and if we do that we think the saving will be so much and so much." But, at this stage, as there are a number of different problems, those will have to be quantified as and when a view is taken as to which is the preferred one. Those calculations will have to be made in order to determine whether, in any individual case, it is worth going ahead with the proposals that are there.

Mr Miller

71. Are you aware, Sir Peter, of any major organisation or major company that today, in advancing principles which have been evolved under the generic heading "total quality management" and so on, are actually appointing fresh layers of advisory administration, in order to co-ordinate their activities? Is this not a fairly unusual approach?

(*Sir Peter Levene*) I would look at it rather differently. If you want to use the analogy of the private sector, what we are actually saying here is that you have a quite large number of individual organisations which all run separately. You are going to bring them under one heading, make some savings in that respect by avoiding duplication and have them run separately. So I do not think you would have more layers. You would end up with fewer layers. You are quite right. In the private sector you do not just pile one on top of the other, put more people in and say, "That is the better way of running it," because it clearly is not. As I said, if I go back to where this came from originally, we were looking at a situation where there are a large number of these establishments, some of which do duplicate each other's work. If you look again at what has happened in the Defence Research Agency recently, which I think is a good model to compare it with, there are different management systems which have been put into place in bringing together disciplines which are duplicated—or replicated, if you like—in other areas.

72. Maybe the choice of phrase "director of rationalisation" is not a particularly good one, but it seems to me that the director of rationalisation, under the principles of modern management techniques applied elsewhere, his principal task would be to work himself out of a job. You have created a layer here deliberately and I do not see the benefit of doing it. What would it actually cost anyway?

(*Sir Peter Levene*) I do not think it is creating a layer. I think it is a different method of organising a number of disparate organisations. Did you have a cost, Mrs Kyle?

(*Mrs Kyle*) I suppose—

Chairman: You have met some of these people, have you? A director of rationalisation?

Mr Miller: I have never met one. I wondered what the market rate was for one of these people or the teams they have.

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[Continued]

Sir Gerard Vaughan

73. Did I hear Mrs Kyle saying that the additional costs were relatively small for these directors?

(*Mrs Kyle*) In the particular recommendations that we are making, the alternative recommendations—

74. May I ask you what you would regard as "relatively small"?

(*Mrs Kyle*) Well, we are talking about the salary of two individuals plus secretarial staff.

75. I see. But what do you think the total is going to be?

(*Mrs Kyle*) Perhaps 100,000 per individual.

Dr Williams

76. How important is it that the owners of research establishments are not also their customers? How important is the customer/contractor relationship?

(*Sir Peter Levene*) May I answer that first. I think it is very important. It was one of my concerns originally when we looked at this and, again, in looking at it briefly one does come across a situation, if you are not careful, where because the establishment is part of the department if you like—because it is part of the structure, because it is part of the overheads—it is there. It exists and it carries out a certain amount of work. In other words, I have an establishment; it employs 500 people. It has been there for a considerable amount of time. It does work: some good, some bad, some indifferent, and it will continue to function. Because I have a department which employs 500 people I continue to fund the 500 people who are working there and they will, no doubt, do some good work during that period. The alternative—and the approach which is taken here—is to say, "I run a department. Yes, I require certain research work to be carried out, but I want to know how much it is going to cost me. I want to have the choice of where I put that research work, whether it is done in my own establishment or not. It may be done by an establishment in the private sector or it may be done, perhaps if some of these recommendations are followed, in what used to be my own establishment but which is now operating in a different manner. They will charge me for it. They will quote a price to do that work and they will carry the work out." That is the object of the exercise.

77. But in order to have that choice it means there has to be, to some extent, duplication of facilities. Is there conflict here between duplication and rationalisation?

(*Sir Peter Levene*) I think what you are really talking about is competition, and the question is whether the way in which the establishments are presently organised, in their present ownership, actually enables the money that is spent on them to be spent in the best possible way. As I think we said earlier, there will always be a certain degree of duplication. The question which this Scrutiny was set up to examine was whether the element of duplication was excessive; whether the management effort which was put in could be better used and could be more economically put about by organising them in a different way. This is the question which has been addressed.

78. Will all the public sector research establishments benefit from greater commercial freedom than the Treasury now allows, do you think?

(*Sir Peter Levene*) That is a constraint within which we are now permitted to move away from. That is a gift, if you like. We know what those rules are and those are the rules which have been followed. So that is within our terms of reference.

Chairman

79. Why should public sector research establishments have to spend time producing assessments of their competitors' activities in order to demonstrate the needs of their own establishment?

(*Mrs Kyle*) We saw this as a useful management tool already used in the private sector, to assist in working out where the establishments should be going in future, and to work out their strategic direction of the establishment.

80. And it is considered that this is something which they have not done at the moment because they have, presumably, not regarded this as necessary?

(*Mrs Kyle*) I am aware of at least one establishment who already does that and finds it helpful.

81. Does it lead to promoting sub-contracting in the instance that you have in mind?

(*Mrs Kyle*) I am not sure that it does directly.

Chairman: No? Right.

Sir Gerard Vaughan

82. What kind of incentives are there going to be to the directors of those units and to the staff to rationalise?

(*Mrs Kyle*) We have suggested that the issue of whether it is possible to provide incentives, and what sort of incentives they might be, should be looked at to follow up actions.

83. One incentive could be that they thought it was worth-while and in a good cause, could it not? Or are you going to offer more specific examples to some of these units to change?

(*Sir Peter Levene*) I think that remains to be seen. We must remember what the ownership of the establishment is. The ownership of the establishments in many cases here are the departments themselves. Clearly they will take into account what the staff feel and they will, of course, consult them; but, at the end of the day, it is up to the owner of the establishment, the Secretary of State in most cases, to decide which way he is going to choose to operate that establishment in the future—whether he is going to put it into a wider research based group—and obviously they will have to take into account how the staff and management of those will be encouraged.

84. Is it fair to say that, at this stage, you are not contemplating any special incentives at all?

(*Sir Peter Levene*) I think it is a question that has been contemplated, or not been contemplated. I think that is part of the next stage of the process.

85. It is part of consultation is it?

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[Continued]

[Sir Gerard Vaughan *Cont.*]

(Sir Peter Levene) No, it is part of the decision making. Clearly people will be more than welcome to put in their views.

86. We have had a number of representations like comments that, as a result, morale has gone down a lot and really has become very low. Have you got any evidence of that? How do you feel about that sort of comment?

(Sir Peter Levene) When any organisation is subject to a study as to its future, this raises questions. Of course staff will become concerned, but I do not believe that this alone should make you say, "Therefore, I am not going to consider the organisation of anything." One has to take staff views into account. They are essential. They are the people who run it. They are the people who make it happen.

87. Do you think that morale has been very damaged by this?

(Sir Peter Levene) I do not know. Lynda has been closer to it.

(Mrs Kyle) I think, as I said before, there is uncertainty and people would like that uncertainty to be resolved. That is understandable.

(Sir Peter Levene) I think that applies to any organisation which is subject to a study of this kind and if you do not want to disturb anybody who is there, then you do not carry out the study.

88. It might influence your decisions on further exercises, might it not?

(Sir Peter Levene) Do you mean different types of exercises?

89. If morale is going to be very damaged in a sensitive area, you would not want to contemplate doing this.

(Sir Peter Levene) I think, as I said before, that if one takes that view, then you cannot examine anything anywhere for fear of upsetting people who are there. One has to try and do it in a sensible manner and this again is why I said at the outset that there will be this consultation period. What has not happened here is that a scrutiny has been undertaken, a decision is then announced as to what is to happen without any consultation with anyone and I think that one thing that has been done here is to ensure that people do understand that their views will be taken into account. There is plenty of time for them to do so and what they have to say will be listened to.

Dr Bray

90. It is possible to go about a review like this in a rather different way though, is it not? You said if the customer rethinks what he wants done, but another way to look at it is to say, "I am a scientist and I know jolly well how things can be done better. Where is the best place to work to do that? I think I have got the bees knees in good ideas on dynamics compression, so right, I will go to the Laboratory of the Independent Television Authority". That would have been a very intelligent decision a few years ago. Likewise, I think I know all about pattern switching and the National Physical Laboratory offered a

superb environment in which to invent it just after the war, but a hopeless environment in which to develop it, so it did not develop in this country. Now, that is a fundamental problem on why these things have not developed in this country, which I would have thought a review ought to have addressed. You have picked on the worst possible people, the customer side, and said, "Right, he is the person who is going to dictate the form of organisation". He does not understand, he does not know and that is what has been so intensely demoralising for the scientific community about the whole review.

(Sir Peter Levene) I think that is one point of view. I do not know that I would share that point of view necessarily. That is saying the customer is always wrong, he does not know what he is talking about, he does not know where to look, he does not understand what things cost, and the best thing to do is to take all the money he has got available, give it to a scientist and say, "Here you are. Here is my money. You understand this far better than I do. You go off and develop it and let me know when you have the result". Now, as I say, if you go back to what Lord Rothschild reported in his report, which I think had a considerable amount of support, he very much took the view that the customer/supplier relationship was paramount.

91. It had support, but it failed, did it not?

(Sir Peter Levene) I do not know that it did fail. As I say, my prime experience of this was in the Ministry of Defence and I do not think it did fail there. In fact if you recall, Dr Bray, we met in a previous session and I did make the point that there was considerable support also for the view which Lord Rothschild expressed, and which I think would be endorsed by everybody, that there should be, and perhaps this goes part of the way towards meeting your point, there should be an element, and I think from memory it was 10 per cent of the money spent, put and made available to the scientists to use, if you like, on a free-hand basis on whatever they thought was the best route to follow. I would certainly support that, but I think if you take the view that only the suppliers know best how to do the work and the customer should just sit back and do what he is told, I would of course respect your point of view in that case, but it is not one I would share.

92. It is basically the way the MRC works when you scratch them, is it not? They back people.

(Sir Peter Levene) Yes, but it is they backing them and I do not think they would actually give them a blank cheque. They must exert a certain amount of pressure over what they do.

Chairman: I think, Sir Peter, you have quite rightly endorsed the fact that your Scrutiny was designed to probe through public research establishments, to look at the prospects for change. That is always a sometimes uncomfortable arrangement, but I am sure your report has been professionally done and we thank you for it. We also thank you for your time this afternoon and for bringing Mrs Kyle and for answering our questions this afternoon.

WEDNESDAY 26 OCTOBER 1994

Members present:

Sir Giles Shaw, Chairman

Mr Spencer Batiste
 Dr Jeremy Bray
 Mrs Anne Campbell
 Cheryl Gillan

Mr Andrew Miller
 Sir Trevor Skeet
 Sir Gerard Vaughan
 Dr Alan W Williams

Examination of Witnesses

RT HON DAVID HUNT, Chancellor of the Duchy of Lancaster, and PROFESSOR SIR WILLIAM STEWART, FRS, examined.

Chairman

93. Chancellor, we welcome you and Professor Sir William Stewart. It is a fact that we have had several sessions with your predecessor and we certainly welcome you to our discussions now. I thought it might be helpful if, before we got into this Scrutiny question, we asked a couple of questions of a more general kind. I know it is early days yet to ask if you have any views about what you yourself might seek to contribute to the Government's science policy, but I think it may be helpful for the Committee to know whether you are committed to continuing the policies of the previous Secretary of Science & Technology that we will see coming through in the next year or whether you think there will be changes to the programme of events set up before your predecessor left office. Do you have any early ideas?

(*Rt Hon David Hunt*) Thank you very much for your welcome to myself and Bill Stewart. Our main purpose is to discuss the Efficiency Scrutiny of Public Sector Research Establishments, but I welcome the chance just to say a few general words. I am very proud indeed to have become one of the first two Cabinet Ministers for Science for 30 years and I inherited a very impressive agenda from my predecessor. I have only been in post for three months but already I have found myself in a position strongly to endorse the White Paper "Realising Our Potential" and the policy set out in that White Paper. I did have a part to play, as Secretary of State for Employment, in helping the production of this Paper, which was very much led by William Waldegrave as you know, and I believe very strongly in the need to develop new partnerships—government, industry and academia—and there are a number of priorities set out in this White Paper to which I might just refer. I very strongly support the Technology Foresight programme. We will have the first overall conclusions next Spring. That is only the start though, because we must make sure that all the results that come from the programme are widely disseminated right across industry and universities and all the very important interests involved, so that they can take these conclusions on board. We will use them in developing the Forward Look of Government-funded Science, Engineering and Technology. The aim is, of course, as you know, to present a far-sighted approach to science and technology policy. This second point relates to the first because our next Forward Look is going to be

able to take on board the results of Technology Foresight and I find that very exciting indeed. The third area is increasing public understanding of science, engineering and technology. We have to enthuse people generally about science, particularly young people, and we must continue our campaign for public understanding which, of course, I have already said, Sir Giles. We will have the Second National Science, Engineering and Technology Week next March, between 17 and 26 March. Then we turn to Research Councils and I am very committed to continuing our work to improve the efficiency of Research Councils. We want to see a higher proportion of funding going into science rather than into bureaucracy and the Director-General, Sir John, as you know, is working very closely with the Councils to ensure that happens. Then I was just going to mention the need to preserve the very high quality of basic research but within a framework informed by Technology Foresight, Forward Look, and benefiting from that greater partnership which I have mentioned already. Looking to the international front, the Fourth Framework Programme, there is of course a need to negotiate the specific programmes and to find a satisfactory basis for formal approval of the Large Hadron Collider at CERN. Our guiding principle throughout all this will be to secure the best possible settlements for Britain and settlements that are good for science. I am particularly pleased, as Chairman of EDH(w), to have found William Waldegrave's initiative, which I have been able to pick up, of establishing the Office of Science and Technology Development Unit to stimulate greater participation of women in science, engineering and technology. The final thing I was going to mention is the priority of reviewing the LINK programme with the objective of broadening it to deliver high quality, collaborative research with the minimum amount of bureaucracy. The only other point I was just going to mention, if I may, Sir Giles, is that I was heading for two announcements this week and I have delayed them until today so that I could explain them to the Committee. First of all, on the future of Daresbury and Rutherford Appleton laboratory, it was agreed that the OST would carry out an extensive review of DRAL in parallel with the Efficiency Scrutiny. That review is now complete and we have concluded, subject to Parliamentary agreement, that DRAL should become a new, independent body from April next year and I believe that arrangement will enable

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DRAL to strengthen its links with industry and other users and give it a sound basis to maintain and develop its scientific excellence. Secondly, on research training, the White Paper sets out policies aimed at improving the breadth and quality of research training and making it more relevant to the needs of students and employers. Following extensive consultation, we are pressing ahead with these policies and I am making an announcement today in this Committee and will be answering a Parliamentary Question to say that the Research Councils will be working with interested universities and employers to pilot new one-year Masters' Degrees by research from Autumn 1995—next year. The degree will not be obligatory for Council supported research students. The purpose of the pilot is to test the new degree's effectiveness as a direct route into employment and as a preparation for the PhD. Of course, we are here to discuss the Scrutiny, but I have no objection, Sir Giles, to answering questions on the wider remit. Turning to the Scrutiny, which was a very wide ranging study, the Government has recognised this, I believe, by allowing a four month consultation period, which is not up yet; it is up on 11 November. I just wanted to stress that the Scrutiny is not to be seen as a cost-cutting exercise. It is really looking at how existing resources can be better deployed. It is important to maintain that, so that the maximum amount of funds are devoted to science rather than administration. We are now in the final stages of the consultation. It is wrong of me, of course, to try and pre-empt the results of that exercise, but I do hope I might at some stage have the opportunity of just listening to the Committee's views on the subject, Sir Giles.

Chairman: Thank you, Chancellor, and thank you for responding to my invitation in such a broad and effective way. That we should have not only an exposé of your views thus early on, but also two announcements at this particular meeting does indicate a fair degree of excitement amongst us, so thank you for that. Is there any specific question that Members wish to ask, with my eye on the clock for the Scrutiny questions?

Sir Gerard Vaughan

94. Do you know the universities yet that you are going to approach, Chancellor, and how many?

(*Rt Hon David Hunt*) Yes, Sir Gerard. What we are doing now is leaving it to the Research Councils. We have in mind 250 studentships on a pilot basis and we are going to leave it to the Research Councils to decide where they should be and to work out the right basis for proceeding. Can I just stress that it is not going to be at the expense of PhD students.

Dr Bray

95. Will there be new money to the Research Councils or will it come out of some other pocket of the Research Councils?

(*Rt Hon David Hunt*) Well, I am at present negotiating in the usual way in the public expenditure round and it is difficult, Dr Bray, to respond in any other way than in the time honoured fashion that all Ministers in my position have to.

Sir Gerard Vaughan: This is very welcome, Chairman.

Chairman: We hope very much that you will be successful in your discussions.

Mr Miller

96. Could you be a bit more clear about your announcement about Darsbury Rutherford? What will the status of the new organisation be? Will it still be a government laboratory? You skipped over it fairly quickly and I do not think any of us fully understood what you were saying.

(*Rt Hon David Hunt*) It will be a non-departmental public body, so it is remaining a government body, but a non-departmental public body. It may be helpful if I indicated now, Sir Giles, that there will be a chairman and chief executive. I will want that appointment to be widely advertised and the best possible person selected. I understand this is a precedent; we have not advertised the positions of chairmen of the Research Councils before, but it is certainly my intention to advertise the position of chairman and chief executive—the combined post—for this new body.

Dr Bray

97. Will it come within the aegis of the EPSRC?

(*Rt Hon David Hunt*) I am talking about a separate body, so it would not be within the aegis of the EPSRC or the other Research Councils.

Chairman

98. It would not be within the aegis of any other Research Council?

(*Rt Hon David Hunt*) Correct.

Mr Batiste

99. So how will it be funded?

(*Rt Hon David Hunt*) It will be funded in the usual way. That will be part of our funding that we announce under our science budget.

Chairman

100. Thank you very much, Chancellor, for your comments and for answering one or two questions. May we now move to the Scrutiny inquiry? What are the problems with the current organisation of government science?

(*Rt Hon David Hunt*) What are the problems?

101. Yes.

(*Rt Hon David Hunt*) The impression I have, coming in as the new Minister to this subject, is that there is some widespread anxiety that more money could go into science and less into administration and bureaucracy and I think that accounts for a concern which stretches right across the whole question of funding. The Scrutiny is an attempt to ensure that we do make sure that we target in the best possible way the resources that we have available.

102. So it is really resource driven?

(*Rt Hon David Hunt*) No, as I said before it is not a cost-cutting exercise. It is really identifying those research establishments where, first of all, privatisation would be a desirable course of action

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and where it is not, to identify what potential there is for rationalising the resources that are available and rationalising the facilities in accordance with those resources and considering whether there should be any changes to current ownership and looking at the whole realm of this subject in accordance with the terms of reference of the Scrutiny team.

Mr Miller

103. This has come upon us fairly quickly after a lengthy spell of the current administration being in power. What stimulated the change in thinking?

(*Rt Hon David Hunt*) I was not party of course to the original policy decisions we are now talking about, but I do strongly believe that the setting up of the Office of Science and Technology, the creation of a Cabinet Minister for Science, has focused minds much more on the need to target resources in the best possible way. I know the figures show that the science budget itself has increased in real terms by nearly 30 per cent in the last 15 years.

104. Is this a recognition that other countries are going ahead of us?

(*Rt Hon David Hunt*) No, it depends what criteria you use for judging our competitiveness. As you know, Mr Miller, I was involved in the drawing up of the Competitiveness White Paper and I have always felt that it is necessary to watch what is happening in other countries, but I still believe that British is best in a whole series of areas; it does not mean you cannot improve not only our record but also the work that we do and the resources that we use.

Mrs Campbell

105. Chancellor, may I just take you up on what you said about the Scrutiny not being Treasury led, because when we look at the Forward Look, the statistical supplement, the tables there, we see that the Government is planning a reduction on expenditure on science from an estimate in 1993/1994 where we have £5773.1(?) down to 1996/1997 plans which is £5014(?) in real terms. That represents quite a considerable reduction, so how are you intending to achieve that reduction if it is not by this sort of Efficiency Scrutiny?

(*Rt Hon David Hunt*) There are a number of reasons for the reduction which I know have been rehearsed for this Committee before. My reference of course to the increase in real terms of nearly 30 per cent was to the science budget itself. However, across Government there is always a need to ensure that whatever resources are available are targeted in the best possible way and I just wanted to stress that this was not a cost-cutting exercise. It is an exercise to ensure that whatever resources we have are targeted in the best possible way.

106. But there is intended to be a reduction in resources associated with what government departments spend on science over the next two years?

(*Rt Hon David Hunt*) Yes, there are individual decisions in individual departments and you are correct in the figures that you mentioned and, indeed, it is part of my role as I see it to persuade colleagues—and indeed persuade industry—to invest more in research and development and in science,

engineering and technology. You will have to judge me by results. I recognise of course the figures that you give. There are a number of varied reasons for them, which I could take up the time of the Committee and go into, but I am looking forward to the future and I very much want to see increasing investment all the time in key areas of science, engineering and technology.

Sir Gerard Vaughan

107. You are, I know, aware that there has been considerable misunderstanding in various places as to the purpose of the inquiry and, as a result, there has been very great anxiety aroused by this. For those reasons, you might say that the quicker it is undertaken the better. On the other hand, I wonder if we may ask you if you are really satisfied with the amount of time that this very big inquiry has had to do it in?

(*Rt Hon David Hunt*) You are quite right in highlighting the two very important criteria. First of all, the Scrutiny has to last long enough so that a really good job can be done but secondly, as you are quite right in saying, it must not be an unnecessarily long period that gives rise to uncertainty. I believe we have the balance about right. Being reviewed will always give rise to some uncertainty; it always does and it always will. However, when you have to do something the key point is to get on and resolve matters as quickly as possible, taking into account the need to involve all those concerned in the decision-making process. The consultation period of four months I believe reflects that need.

108. If I may take up that point a bit further. For example, when the Parliamentary and Scientific Committee had a meeting the other evening with Sir Peter to discuss this, there were some very strong views put that, particularly for the two Houses, the four months was not long enough to consider this properly. The two Select Committees had not had sufficient time to look at this because of course of the Parliamentary recess. There were very strong views indeed, I can tell you, and I am sure they will be coming up again when you are talking in the Other Place?

(*Rt Hon David Hunt*) I think I do so on Monday. The consultation period is not over until 11 November. As I understand it, I then have three months—or we hope within three months—to come forward with our proposals. If the Committee feels very strongly that we should extend the consultation period, then that is a view which I would like to hear from the Committee, but it is I think difficult to contemplate a decision which would then prolong the uncertainty for everyone involved. I hope I have put the dilemma.

Chairman: The Committee reflects anxieties, certainly, that the period of three months, as it was originally, is perhaps a little insufficient for dealing with quite a complicated series of establishments, some of which of course have not been scrutinised before in any way and therefore there would be some anxiety expressed, I think. I think we would reflect that.

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Sir Trevor Skeet

109. Chancellor, this document on Scrutiny is not of course your document. It is just a group of people who have expressed their views and we have a consultation period. What I am going to refer to is a letter that was sent to Sir William and this is from Glaxo Holdings, Dr Michael Elves. Now he makes one or two rather outstanding observations. The first thing is that there are 31,000 scientists involved here, and the form of consultation, whether it is four months or more, is quite insufficient to decide their future, bearing in mind that with the AFRC, NERC and a number of other governmental research bodies there has been wide rationalisation up to date anyhow. The other question I would like to ask is this; his observation is, in his view ADAS which is the Advisory Body for Agriculture—it is a consultancy—is the only one which should be privatised, but he observes the remaining Life Sciences, PSRE, are I believe not candidates for privatisation given their heavy dependence on core and contract funding. Now, I do not know whether it is fair, Chancellor, to ask you that question or whether we should inveigle Sir William to make an observation?

(*Rt Hon David Hunt*) May I first of all, Sir Trevor, just say that I should make the Committee aware, if it is not already aware, that a Parliamentary Question was answered on Monday about the future of ADAS. The Committee is aware? Then I have no need to refer to that.

Chairman

110. The Chairman of the Committee is certainly unaware, but I have to concede that the farming lobby in Pudsey is not exactly—

(*Rt Hon David Hunt*) My predecessor, the Minister of Agriculture, and the Secretary of State for Wales, have considered all the options for the future corporate status and structure of ADAS and they announced on Monday that officials have been instructed to investigate the scope for a possible privatisation. It is too early to report on final conclusions, although I would have thought commercial consultancy and R&D are likely to form the core of any private sector organisation. It is likely that some work would have to be left with the departments, but it is not yet clear what that would involve. The decision follows a separate review of ADAS which was begun in September last year and conducted by the Ministry of Agriculture and ADAS in parallel with the Efficiency Scrutiny and there was full transparency between the two reviews. I hope that just sets the record straight about ADAS, but it does not answer Sir Trevor's main point. I do not know whether Sir William wants to add anything?

(*Professor Sir William Stewart*) Chairman, Dr Elves is broadly supportive of the Scrutiny recommendations. That was the interpretation I had of the various discussions I have had with him. One has to be very careful not just to pick one letter out from the various correspondence that we have. We really ought to stand back and consider them all. Once we have done that we ought to be able to make a better judgment of how best to take this forward.

Sir Trevor Skeet

111. Yes, but Sir William, it appears that the gentleman I am referring to, Dr Elves, is in favour of several research agencies being under rationalisation, not under privatisation?

(*Professor Sir William Stewart*) Well, I would say, Chairman, to Sir Trevor, through you, is that that is one view and I am not going to be drawn on it just now.

Sir Trevor Skeet: Mr Chairman, if I could just pursue an additional point on this one?

Chairman: I think Sir William has indicated he has no further points to make on this.

Sir Trevor Skeet

112. If I may just pursue one thing further; I have read this document with great care and they also refer to two Directors of Rationalisation, which may prove to be of some importance. Would you like to express your views on that?

(*Professor Sir William Stewart*) Chairman, I have my views on Directors of Rationalisation, but I would prefer—

113. It is on page 57.

(*Professor Sir William Stewart*)—not to discuss them just now.

Chairman: I think we have to accept that you are conducting, or will be conducting, the review of all the evidence that is placed before you in relation to the Scrutiny inquiry and no doubt this letter will be one of the things you will be considering. Dr Bray?

Dr Bray

114. The letter to which Sir Trevor has just referred is a particularly well-informed letter because Dr Michael Elves is Director of Scientific Affairs in the Corporate Strategy Unit of Glaxo. Furthermore, he was the actual scientific adviser, or a scientific adviser, to the team. May I read what he actually says about the team and its competence to look at the Research Councils? "Apart from Mrs Kyle [a non-scientist] from MOD and Dr Chris Ovenden, who was from Smiths Industries, all of the Civil Servant members of the team were drawn from Government Departments which had ownership or other links to the Institutions being studied. They were often less than objective in their approach to the analysis they undertook, and this made provision of advice to them difficult and sometimes frustrating. Given that the team was drawn from "owner" Departments, an unfortunate omission was the lack of any representation from the Research Councils on the team. This was a regretful omission in view of the significant number of Research Council Institutes being examined. This make-up of the team was no doubt a major influence in arriving at the proposed favoured models which reflect a bowing to departmental sensitivities and political expediency rather than providing a rational approach to the provision of structures for the effective delivery of science and technology." Does that, Mr Hunt, build up your confidence in the report that the team produced?

(*Rt Hon David Hunt*) Dr Bray, I am I suppose in a rather privileged position at the moment in that I have a completely open mind. I strongly support the

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[Dr Bray Cont]

setting up of this Scrutiny; I support its Terms of Reference, but I am determined, until I have finished looking at all the consultation documents that have come in, not to reach any final conclusions. I would like to hear from Sir Trevor, if that is possible, or any other member whether they do believe there is a need for two Directors. I would like to hear on that particular point, but I am trying to approach this consultation in the right way and I do not want to give any indication as to even my preliminary views.

Sir Trevor Skeet

115. Chancellor, we appreciate your open mind and respect it. I wonder whether you would be prepared to give an assurance that you will give a longer term, say six months, for a consultation so that more essential information is fed in by people in the industry and scientists who understand the matters involved?

(*Rt Hon David Hunt*) My only hesitation in saying "Yes", is the fact that I know that by saying "Yes", I would then be prolonging the uncertainty, which was mentioned earlier, of those involved for a further two months. I just want to listen and then if I am approached by a whole series of people who say: "Mr Hunt, it has not been possible for us to respond within the time scale properly", then obviously I will consider that.

Chairman: I think we will leave that matter where it stands now, Dr Bray. We have the information here; it will be passed forward and we shall be commenting on the matter in our report and the Chancellor has to review all the opinions that are placed before him. That is what he has agreed to do.

Dr Bray: There is the question of the Directors of Rationalisation and I do not think we are planning to ask about that.

Chairman

116. No. Well, that has been raised, I think.

(*Rt Hon David Hunt*) The two Directors, I think, Sir Giles were mentioned by Sir Trevor. That is why I mentioned them.

Chairman: Right. Indeed. It has been mentioned.

Dr Bray: It has been put in evidence by Professor Tom Blundell, the Chief Executive of the Biotechnology and Biological Research Council, a view which I think reflects the view of a great many managers of science. "The planning and implementation of structural change are likely to prove more effective if they are internalised rather than being the responsibility of a separate senior management." In other words, the difficult questions of rationalisation are best dealt with internally, within the structures which you appoint, rather than as a further layer which you impose upon people whom you have already appointed.

Chairman: I think that point is for the record. Anne Campbell?

Mrs Campbell

117. Chancellor, one of the difficulties I think that some of us have is in seeing the rationale behind the Scrutiny and particularly I think the rationale which made you embark upon this in the first place. If it is not Treasury-led, then perhaps there are other

reasons for looking at the Research Council institutes and laboratories and those objectives, I think, are not clear. I think we should be asking questions about what the objectives are of public sector research establishments, what are the objectives of Research Council institutes? One of the problems is that because of this lack of clarity, I believe, about the purpose of government-funded science, they are being subjected to a review, scrutinies and further reviews in a way that is very demoralising and dispiriting for the people who work in them and I come to the crux of my question really which is that changes to laboratories and Research Council institutes were made as a result of the White Paper and the concurrent departmental reviews and I wonder why those were not postponed until the Scrutiny was completed?

(*Rt Hon David Hunt*) Well, the first point I would make about the Scrutiny, Sir Giles, is that on page 46 of the White Paper *Realising Our Potential* it was clearly set out that there would be a Scrutiny undertaken and the reasons for it are set out in paragraph 5.12, so I think it is pretty clear why. I do not know if Sir William wants to add anything?

(*Professor Sir William Stewart*) Chairman, there is another issue which has to be taken into consideration in the debate. That is, as one looks to the future, one has to ask whether the existing organisational structure and the various laboratories, right across the civil sector, are those which are optimum for the future. If one looks to the future, we must look more to what will happen not only nationally but what happens *vis-a-vis* Europe. We want our laboratories to evolve into European centres of excellence—Eurocentres—as I have said before. We have some of these. We have managed to do this at the Institute of Plant Science Research, at the John Innes, where restructuring and rationalisation had to take place. It is now an international centre of excellence. We have done it the Sanger Centre at Cambridge where we have consolidated to give us a European centre of excellence. Almost certainly we will do it at the Institute for Animal Health at Compton through consolidation and restructuring. In a sense, we did it with the BBSRC; the old AFRC was in terrible trouble and we had to take the difficult steps, at the time, of rationalisation. Out of that has evolved a new BBSRC which is an enormously helpful step forward. Consolidation, in many areas, will give us strengths, and help ensure that we have centres of excellence across Europe. At the same time some of the laboratories will remain small and will remain excellent. It does not mean that because a laboratory is small that it is not an excellent laboratory. There is a likelihood, nevertheless if they are smaller, and looking to the future, that they will be satellites of Eurocentres elsewhere in Europe. That is the sort of consideration that one has to give to this area. Take the Institute of Grassland and Environmental Research at Aberystwyth. One of the reasons that it is doing well now is because the AFRC decided to consolidate there. The fact that we are looking at such issues should not be viewed in a negative light.

Chairman

118. The question remains in our minds, Sir William, as to why it is necessary to go through the Scrutiny system if it is not Treasury-led when you

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have quite clearly demonstrated the capacity through osmosis within the system itself to turn individual institutes into world beaters?

(*Professor Sir William Stewart*) The reason is that, by and large, the rationalisations were done within single units, within the responsibility of single chief executives. The Scrutiny has been looking across the whole area covered by various chief executives.

Dr Bray: That was not so with the restructuring of the Research Councils.

Chairman: The Research Councils were restructured quite differently.

Sir Trevor Skeet: Oh, yes.

Dr Bray

119. It was not so in the reconstruction of the Defence Research Agencies or the DTI laboratories. Where was it conducted by the directors of individual institutes?

(*Professor Sir William Stewart*) I am sorry, Chairman, I did not quite catch the question.

120. You were saying the reorganisation was carried out by the heads of single organisations. I was asking, of the major reorganisations that had been carried out of the Research Councils, of the DTI research establishments and of the Defence Research establishments, why were those not considered to be looked at on—they were all of them cross functional, cross institutional reviews?

(*Professor Sir William Stewart*) Because as it said in the White Paper, the Scrutiny would run along side other examinations which were currently under way.

Chairman

121. So it was not seen as an overlapping operation, but one that ran parallel?

(*Professor Sir William Stewart*) It would not be very sensible to stop the restructuring which individual departments were doing, simply because the Scrutiny was going on.

Chairman: Right. That is the answer to the question.

Dr Bray

122. Was not the problem that you had a Cabinet Minister who was responsible for Scrutiny and for science and he felt that if he did not apply the Scrutiny procedure to science he would be in trouble?

(*Rt Hon David Hunt*) That is not the way I see it, Dr Bray, and my predecessor spent some time explaining the rationale and stressing all the time that the only purpose of this Scrutiny was to ensure that the best quality research is obtained for the best value for money.

Mr Williams

123. What is the difference in mission between Research Council laboratories and those of the Departments?

(*Professor Sir William Stewart*) The Research Council scientists basically should be doing cutting edge research at the basic and strategic end. Departmental research establishments, in addition, deal largely with statutory regulatory and policy issues. Some of these can be quite repetitive work, not

cutting edge. But it has to be done to resolve statutory, policy and regulatory issues. In the Scottish Office laboratories, I may say, it is different, because in these laboratories do a lot of basic research, they do strategic research and they do the policy statutory and regulatory work as well. There is no single model. In summary, in the Research Council establishments they do largely basic research and strategic research, in MAFF they do largely policy, statutory and regulatory and in the Scottish Office laboratories they do both. There is not a big difference between what can be done in any of the laboratories.

124. When we look at departmental laboratories, should they just be working for their departments or what should their links be with industry?

(*Rt Hon David Hunt*) I suppose in response to your first question the answer is that there is no definite dividing line. The answer to the second question is that I, as Cabinet Minister for Science, will always want there to be a good overview, right across all departments, so there has to be a wider perspective here. That is why the Prime Minister set up a Cabinet Committee called EDS, which is to look right across government at this whole area. I very much hope that departments will not have a narrow look, with the only justification for particular work being the narrow departmental look. I hope I will be looking over their shoulder to ensure that it fits in and meets the wider remit that I believe very strongly must be there.

125. When you look at links with industry, do you acknowledge that this group of laboratories plays a very important role in technology transfer and that generally it is one of our problems in this country that we lack this very kind of infrastructure which links higher education and government and industry?

(*Rt Hon David Hunt*) Yes, I am always concerned that we have an insufficient infrastructure in this country for proper technology transfer. I would agree with that. As to whether you are right in attributing particular benefits, that is something I will very carefully consider, particularly where there is demonstrable evidence that there is a positive partnership there between industry and science working together in the technology transfer context. That is something that I want to promote and speaking on the wider issue, Sir Giles, which I think is very important, we do have to make sure that when we develop new ideas, innovative procedures and new inventions in the United Kingdom, that we do have the infrastructure to be able to take those through development to production.

Mr Batiste

126. Would it be fair to say, Chancellor, from the answers you have given already, that the departmental research laboratories were the place where you would expect to find a significant part of the detailed scientific resource of a particular department?

(*Rt Hon David Hunt*) Yes; Certainly when I was an Energy Minister I did look, not only to my chief adviser, but also to the work of certain laboratories—Warren Spring in those days—to carry out certain work. In those days I remember I

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[Mr Batiste *Cont.*]

had some very valuable advice. There is always a need for rationalisation, developing the structures to take account of modern day pressures, but you are quite right; there is a great deal of work there to inform Government.

Cheryl Gillan

127. With the integrated approach which was so strongly reflected in realising our potential and in the Forward Look—and you said earlier on, Chancellor, that you supported the Terms of Reference of the Scrutiny—I wonder whether you could tell me whether you believe there is a danger in the Scrutiny, because it mixes government research establishments and some Research Council institutes, but it does not include all the establishments receiving public sector research funding, such as for example, executive agencies like the Meteorological Agency. Will it result in piecemeal solutions and if when you look at this aspect you deem that we need to go with Scrutiny, would you in that instance extend the time for it?

(*Rt Hon David Hunt*) Yes, I thought, if I recall—I cannot immediately lay my hands on the reference—that this was considered in some detail in the Scrutiny report and I think it is an aspect that is being dealt with in consultations. But if there is a need for a wider basis, then of course I will think very carefully about that.

(*Professor Sir William Stewart*) Chairman, if I could just come in. No, I do not think it is piecemeal. What the Government is trying to do is something quite different and that is to look at things overall. The Research Councils have been looked at; the DRA is being restructured for the next century. The Scrutiny covers another sector: the research establishments owned by civil Government Departments. It is perfectly right, as part of a broader overview, to look at them all. This is the last part in the jigsaw.

Chairman

128. May I ask a further question on the Scrutiny side? The Scrutiny speaks of making parts of Government research establishments privatisable by removing those that are less privatisable, but surely there is some sort of synergy, is there not, that already exists perhaps in the GRE itself between these two aspects of its business. Why should they be divided in this way?

(*Rt Hon David Hunt*) That is very much a point to reflect on. The Scrutiny team has set out its views on this. It has set out the options.

129. Right. So you would be perfectly prepared to consider a solution which did not involve, as it were, cutting them up in this peculiar fashion?

(*Rt Hon David Hunt*) Yes. As I have stressed before, Sir Giles, being a new Minister does have one or two small advantages and one of the advantages is that you can view things with a genuinely open mind!

Chairman: Very good! Sir Trevor?

Sir Trevor Skeet: Chancellor, when one privatises of course it is up to the private sector to get rid of the unsuccessful operation. That must be implied by what you suggest if you take this particular route. What I fully subscribe to—and I think you are

absolutely right on this—is that you want centres of excellence. But you know by pulling up the plant and continually examining the roots, you can destroy the plant altogether and that is a thing to be avoided. What course do you intend to take on this and how are you going to define what is essential to the Government and what can be put outside in order to live and flourish?

Dr Bray

130. Or die!

(*Rt Hon David Hunt*) I beg your pardon?

Chairman: Or die, says Dr Bray!

Sir Trevor Skeet

131. That is Dr Bray's comment!

(*Rt Hon David Hunt*) I hope we are not pulling up the plants constantly to look at the roots because if I have any green fingers it has taught me that that is not the finest way to ensure that the plant grows stronger. I hope what we are doing—and I am not going down the agricultural route of analogies!—is looking over the field and making sure that the crop is ready to harvest in the best possible way. To do that you have to make sure that you continually look at the whole picture. That is what I am doing; I want to listen to advice and any advice this Committee has I am very anxious to hear.

132. May I just pursue this one? You mention the agricultural root. Since 1983 the number of staff at AFRC institutes has gone down from 6,300 to 3,500. That is a very short period of time. Are we not going to experience under some of these—unless there is wide rationalisation—further reductions, further losses of scientists and further disruptions?

(*Rt Hon David Hunt*) I just want to make sure that whatever resources we have at our disposal are used in the best possible way. Now sometimes that will mean that the rationalisation will reduce numbers, but the most important criteria must be to get the best research, the best value for money and I hope that is the theme you will find running through our conclusions when we announce them.

Mr Batiste

133. One of the alternative forms of privatisation recommended in the Scrutiny is a transfer to universities. Now the universities, of course, have their own pressures and their own priorities. How would you contemplate that such a transfer could, in practice, take place? Would there be guarantees that the university would maintain this facility as available to the Government or would the university be free to reallocate the resources as it saw fit?

(*Rt Hon David Hunt*) I think we would want to be satisfied on a whole range of issues if we were to decide to go down that route. Implicit in that decision must be an assessment of the need for that particular expertise and to ensure that any move towards different ownership would enhance that expertise and enhance the centre of excellence. As regards guarantees in the future, that is a matter to consider when you are actually dealing with the detail of the particular transfer.

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Mrs Campbell

134. Chancellor, one or two of the universities have expressed considerable alarm about the thought of taking over some of the public sector research establishments and I gather that one of their problems is that they are afraid that with the sort of rationalisation the Government has in mind there would be redundancies and early retirements which they might finish up funding at the end of the day and this is causing anxiety. I wonder if you could offer any reassurance at this stage that if the universities do take over public sector research establishments, they will not be asked to fund any consequent redundancies as a result of that rationalisation?

(*Rt Hon David Hunt*) Without knowing the specific proposal that one is dealing with, it is very difficult to give direct answers to those questions because a lot will depend on what it is the university is looking for in value terms and what it is we are offering and the course of action we decide to take. Once you have the priorities established, then you can make decisions on the detail, but we certainly will not force universities; that is clear. I make that absolutely clear here and now; we are not at that stage and we are not going to force universities to do something that they would otherwise not wish to do.

135. Let us look at a particular example, for instance, the Babraham Institute being taken over by Cambridge University; I think that is one of the options that has been mentioned. If that were to happen and there were any resulting redundancies at Babraham, would Cambridge University be expected to fund the long-term consequences of those redundancies?

(*Rt Hon David Hunt*) I think that is a matter for the negotiations at that time and it presumes the existence of a rationalisation that would involve measures of that nature. Really, at this stage in the Scrutiny, as I have said at the outset, I do not want to be drawn on that sort of detail. I want to reflect, genuinely reflect, at the conclusion of the consultation period on all the points that have been raised and indeed no doubt on a lot of points which have not been raised, but which I have concluded ought to be considered.

Mr Miller

136. Chancellor, today I suppose is an odd day to ask this question when all ten of Cheshire's MPs from both parties are a bit upset about the *status quo* being applied by Sir John Banham, but in the context of your responsibilities, as the Minister responsible for the Efficiency Unit, do you understand that there is enormous anxiety amongst people in some of the laboratories that the *status quo* does not appear to be one of the options which you would accept as a solution. Would you confirm one way or the other whether the retention of the *status quo* is always an option resulting from any Scrutiny?

(*Rt Hon David Hunt*) Yes. I have not made up my mind; *status quo* must be an option and on the last question I think we have some tremendously valuable centres of excellence; Babraham is a very good example. We have some tremendously valuable centres of excellence and I am not prepared to rule

out any particular option; the *status quo* must be an option.

Mr Williams

137. Could I just say that clearly in the Government's mind is privatisation if possible, or whatever steps are possible in the direction of privatisation.

(*Rt Hon David Hunt*) Yes, but the Terms of Reference of the Scrutiny were to identify those establishments where that is feasible and desirable, but where it is not then to look at the potential for rationalisation of facilities or capabilities. We are very open about this. I would just stress again that I have not reached any conclusions. I did not set off in my deliberations with any preconceived ideas about what should happen. I hope, as I have stressed again and again, that I come to this with an open mind.

Cheryl Gillan

138. As in any company or organisation, when there is a potential for radical change, morale does tend to take a bit of a dip and I think earlier on in the evidence you have been giving to us we have heard words such as redundancy, privatisation, rationalisation. I wonder if you could answer the question, are you taking any active steps to maintain the morale in the PSREs?

(*Rt Hon David Hunt*) I hope by making it clear that I am going to look at all the items of evidence before reaching any conclusions; that I am communicating through to everyone concerned that there is no agenda which is already written here. Second, I hope by the answers I was giving before, that it is clear I do not want to prolong unnecessarily any uncertainty, because uncertainty can be very debilitating. It can undermine the confidence and morale in an establishment and I do not want that to continue for any longer than necessary. I just stress again that the purpose is not a cost-cutting exercise; it is to ensure we get the best research, the best value for money.

Sir Gerard Vaughan

139. Would you just bear in mind then that your statement just now that the *status quo* would also be one of your thoughts and options is one way of perhaps reassuring people who are very anxious and who did not think that the *status quo* was going to be included. Statements of that kind are very helpful.

(*Rt Hon David Hunt*) Sir Gerard, I do not want to mislead people. What I am stressing is that there are a range of options for me to consider and I am not ruling any one of them out, but I do not want to mislead people as to any undue emphasis I am giving. I am merely saying that these are all options, that I have not yet made up my mind and that I do not believe I should until the consultation period is at an end.

Dr Williams

140. I understand that with the Building Research Establishment and some of their laboratories, partial privatisation is being considered, is it not?

(*Rt Hon David Hunt*) Yes.

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[Dr Williams Cont]

141. That parts that are profitable or commercial could be privatised leaving a rump still in the public sector. If you found, with that as the particular example, that industry is very hostile to that proposal, what cognisance, what weight, are you going to give to the views of industries that benefit from research that goes on in that establishment?

(*Rt Hon David Hunt*) It is difficult to say what weight I would give before I have seen the representations, but obviously we are looking at a range of options which could involve privatising part of the facilities and we will naturally be very interested to hear the reaction of industry to any proposals like that. I would hope I would give them the weight that one could attach to those sort of representations and should attach.

142. More generally, is there a danger here that industry in Britain could be penalised or disadvantaged by this very exercise, that we are potentially slimming down or whatever a group of laboratories whose work is very important again, both for research work which cannot be conducted in individual enterprises and within, again, this area of technology transfer?

(*Rt Hon David Hunt*) No, I do not accept that at all. In fact, Sir Giles, I met some of our senior vice-chancellors yesterday and had a very good round-table session with them. Their advice was that the science base is strong in this country and I am delighted about that and to hear it from people involved at the university end. I am proud of that fact. I believe the science base is strong and the whole purpose of all this is to strengthen it still further. That is the purpose of any Scrutiny. It is not a cost-cutting exercise; it is to maintain that excellent reputation we have in centres which really rival any that you find anywhere in the world. I want to make sure that we continue to improve our reputation.

Sir Trevor Skeet

143. Bearing in mind that PSREs and RCIs obtain funding from a variety of sources, how do you define over-capacity in government research facilities?

(*Rt Hon David Hunt*) If I remember looking through the multi-departmental Scrutiny there is a suggestion of over-capacity right across. What I have not found myself is the ability to identify exactly in which particular pockets that over-capacity might exist and I think that the important thing is constantly to look right across the spectrum. There may be overlapping areas; there may be duplication. The important thing is to identify that and to make sure that you are maximising the resources in the best possible way.

144. Minister, you are picking out two elements; under-utilisation of equipment and buildings and the other thing is overlapping. Does not that come down to a continuation of rationalisation?

(*Rt Hon David Hunt*) Well, the report makes it clear the team were unable to identify and quantify over-capacity, although its existence was, and I quote, "widely admitted". They did see some of it in under-utilised buildings and the point made by the report is that traditional markets for establishments are declining due to changes in government expenditure, an increasingly open market for S&T,

and unless measures are taken to reduce the size and to reduce the cost of the public sector supply base, there is a real risk that resources would be devoted to overheads rather than science. The whole purpose of this consultation is really to try and identify the key areas so that decisions can be made. At a general level, I very much welcome the Committee's views on how this could be achieved across a range of establishments.

Sir Trevor Skeet: In the past experience, Minister, you will appreciate that every rationalisation has involved expenditure of a lot of money, particularly on redundancies and other costs which have had to be borne by the groups themselves. I hope you will take these into account.

Chairman: I think that inevitably will follow. Dr Bray?

Dr Bray

145. The report offers two different models of rationalisation/reorganisation, one based on the creation of new market sectors, the other the creation of geographically based groupings. The geographically based groupings is really a sop to Scotland and speaking as a Scottish Member, I think most Scots would like to think that they were batting in a world league and not just in the provincial squabbles and we would want things optimised for the overall performance of our scientists and their contribution to the country as a whole. But the market sector, likewise, is preoccupied with the commercial image, rather than how science and technology is, in fact, done. A quite different—or a different but related model—was put forward by Dr Elves, whose comments we have already discussed, basing any rationalisation on different fields—humans, animals, plants and fishes—which is logical in relation to the science and not unrelated to the end users. However, he takes the point that just going for agencies, whether it be a single civil research agency which was rejected or four research agencies, really does run up against all sorts of dangers and resistances and obstructions and he puts forward a proposal for a civil research consortium, a different consortia. Are you aware of the distinguished, strategic but principally small precedent of a very successful consortium which brings together the Treasury and the Bank of England and the Economic & Social Research Council for macro-economic modelling in the United Kingdom? It has been running for about 12 years, very successfully meeting the requirements of the Treasury and the Bank but using the resources of the universities and the research institutes with the allocation handled by the consortium.

(*Rt Hon David Hunt*) I have not really formed a view on models, but I just wondered whether Dr Bray is really urging me to rationalise on the Elves model.

146. I am putting forward the point that the particular models proposed in the report do not exhaust the possibilities.

(*Rt Hon David Hunt*) Yes, I understand.

147. There are other models, but possibly to think of it in terms of reorganisation is not the right way to do it. If you leave the work where it is, if you leave management where it is, but you get the chaps

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[Dr Bray *Cont.*]

together to plan their forward work, to think of their distribution and resources between them and so on, you get a very much more constructive, positive atmosphere in which people can concentrate on the work to be done.

(*Rt Hon David Hunt*) I really have to say I have no views on the models.

148. Will you possibly consult the Treasury and the Bank of England as to their satisfaction with that kind of arrangement?

(*Rt Hon David Hunt*) I will certainly make the necessary inquiries.

Chairman

149. We might make that a recommendation that you might care to follow up.

(*Rt Hon David Hunt*) Right. I will take that on board.

Mrs Campbell

150. Chancellor, you have repeatedly said to us that this is not cost-cutting exercise, but nevertheless it is possible that you might find savings from reorganisation and I wonder if you can assure us that these will be allocated to science rather than spent by departments or claimed back by the Treasury? May I just add a supplementary question while I am at it? I did draw your attention earlier to the Forward Look projected spend on science and technology by Government and if we simply look at one department—let us take the DTI for example—in 1986/1987, the DTI were spending £660 million on science and technology down to £318 million today and a projected £238 million in 1996/1997. I suggest it is stretching the credibility of this Committee somewhat to suggest that if savings are made through the Scrutiny exercise that those are not going to go back to the Treasury as part of those cuts which are required for the DTI to meet its target.

(*Rt Hon David Hunt*) I will certainly share Mrs Campbell's views with Michael Heseltine, the President of the Board of Trade. I think there is a very deep misunderstanding about public expenditure here, Sir Giles. The Treasury does not have any money; it does not snatch back money. All it has is taxpayers' money and it allocates resources. It is up to me to ensure that the needs of the science, engineering and technology base are well known to all my colleagues and that they are attached the correct priority. Now the Prime Minister made an important speech last year where he made it clear that this whole area was a high priority. We have been able to increase my science budget in real terms in this financial year. The new unified Budget included science as one of the four key areas of priority so far as the Chancellor of the Exchequer was concerned. It is not a case of the Treasury snaffling back money; it is always a case of our making sure our arguments are heard loud and clear right across the nation about the importance of science, engineering and technology.

151. Would you say that sort of reduction, from £660 million down to £238 million, is an indication that the Government are giving science and technology a priority?

(*Rt Hon David Hunt*) I want to be able to demonstrate that we are indeed giving the right

priority to science, engineering and technology, not only in my own Department, but right across Government. However, as I said before, these changes are due to a whole range of factors about which I am sure I could write to you. The President of the Board of Trade could explain those particular figures in detail. My priority is to make sure that the correct priorities are afforded to this whole area by all my Cabinet colleagues.

Dr Williams

152. May I ask the same kind of question, but in a different way? We are all for efficiency in terms of public expenditure and if we were just looking at the global total within the science budget and its reallocation in a more efficient way, that might be uncomfortable but broadly I think we would all agree that would be a very good end purpose. However, I think the concern here is that we are out to look for savings and that is indirectly Treasury driven and I think the concern of scientists in this sector is that in three months' time or six months' time you will have a target figure of something like 10 per cent or 20 per cent savings within this budget and that Director of Rationalisation will have to go around and find where it is going to come from and in a sense we will have a similar exercise here to what we have had all over the country in defence expenditure, where really, instead of being within a frame of a policy it is Treasury driven cuts.

(*Rt Hon David Hunt*) Having been a Member of the Government since 1979, I do not recognise the phrase "Treasury cuts". What is always happening every year is that the Government of the day decides on the priorities in expenditure and utilises, in the main, receipts from the taxpayer and a certain level of borrowing. It is always a case of affording the right priorities. Now, Mrs Campbell will know that if you have a withdrawal from nuclear fast breeder research that has a tremendous impact on the expenditure. If you have increased receipts from launch aid to support aeronautical R&D it affects the figures and the expenditure. The important thing is to make sure, whatever decisions are taken on individual areas of policy research, that you constantly drive into the minds of all those concerned in decision making the high priority which I want all my colleagues to accord to science, engineering and technology and research and development. Now, where there are going to be savings made as a result of rationalisation, of course I want those to be spent on the science base. The whole point of the exercise is the way you make savings. You are making them in order to get the best value for money and the best quality research, but at the end of the day it is always, every year, up to each departmental Minister to argue the case. I do not think there are many people who were able to achieve what my predecessor achieved in persuading the Prime Minister and the Chancellor of the Exchequer to give such a high priority to the science base. I certainly intend to maintain that record.

Mr Batiste

153. During our inquiry into innovation, we observed that successful manufacturing companies in particular had to have, in house, sufficient

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[Mr Batiste *Cont*]

scientific expertise to plug them into the science base and to inform their decisions as a customer and as an investor. You said in reply to an earlier question to me that a significant part of your departmental science resource is in the laboratories. If you move into a customer contracted relationship in its sharpest definition, you will be removing from your Department the resource that you will need to inform many of the decisions that you have to make. That would mean either duplicating the resource in house or finding some other mechanism. How do you think you will deal with this problem?

(*Rt Hon David Hunt*) I think if I recall in the Scrutiny report, which deals with this—I think in paragraph 7.5—really there should be no conflict between broadening the supply base and using suppliers to assist in the intelligent customer role. I do not really see that there is a particular problem here. The recommendation though was that departments actively encourage staff exchanges between the research establishments and headquarters.

154. We found quite clearly, in talking in depth to companies, that unless you had a certain critical mass of expertise in house you simply were not able to deal with suppliers in an effective way because you had, in house, the lack of ability to be able to identify the sort of questions that you need to ask, to approach the sort of people, to identify the people that you need to be able to interpret the data that you were getting. I think there is a considerable fear in the Committee that whilst there are many advantages in a customer contractor relationship, you will have to be very careful in departments to ensure that you retain that critical mass within the departments themselves. I cannot at the moment see in the Scrutiny how you propose to do that as a mechanism.

(*Rt Hon David Hunt*) I agree with your point. It is a very, very important point, Sir Giles, and it is one which I will bear in mind when I come to make my decisions. I think Mr Batiste has made an extremely relevant consideration about which I will think very carefully.

Sir Gerard Vaughan

155. May I ask you how you see the place of basic general research in all of this, in the applied research departments particularly? Do you see there will be a need to safeguard basic research because this document, the Scrutiny, comes out very heavily on customer demand, customer directed research?

(*Rt Hon David Hunt*) I think you have to get the balance right.

156. How are you going to achieve that?

(*Rt Hon David Hunt*) Well, by making the right decisions! It is very important to bear in mind exactly what you have said, that you have to maintain the right balance. You must have a strong basic research base. I accept that. Do not forget that the budget for my Department—thanks to my predecessor's active negotiations—did go up in real terms this year.

Sir Gerard Vaughan: You see, Rothschild, in his report, recommended I think that 10 per cent of the budget should be directed to basic research, or should be retained for basic research. This has not actually happened in many departments.

Chairman

157. Perhaps it will henceforward.

(*Rt Hon David Hunt*) Yes, I would like to think so. I am not so sure it is a good idea just to put percentages on specifically, rather than look at the quality of the research, but I take Sir Gerard's point.

Mrs Campbell

158. I think the problem is, Chancellor, that if you increase the efficiency of government research laboratories to the point where you only have enough people to carry out the amount of research being required by government, you do not leave any free time for people to go away and do the sort of research into problems that interest them. I think that this is probably one of the best ways of basic research actually occurring in these laboratories and I am afraid that you are actually going to squeeze that out, if in fact it has not been squeezed out already; I think it has in many cases. Do you have any idea as to how you can reinstate that and safeguard the very crucial basic research that is going on?

(*Rt Hon David Hunt*) I have already made it clear, Mrs Campbell, that I want to safeguard that essential basic research and to ensure that it continues to give us centres of excellence in that particular area. I recognise the validity of the points that have been made by Members of the Committee and I will do my best to make sure that it is borne in mind. Returning to the models, it would be interesting to know whether Members of the Committee are supporting the Scottish model where I think both basic and applied go together.

Dr Bray

159. There is another dimension of responsibility that departments carry and that is in displaying the regulatory and the executive. The report, for example, suggests possible savings between Medical Research Council radiobiology units and the National Radiological Protection Board, both of which are at Harwell. In fact, they do quite different jobs. Handling the consequences of Chernobyl or the examinations that were needed when the claims for Christmas Island and the cancer from the troops who were exposed to radiation there, those were issues requiring major investigations and a great deal of work by the Radiological Protection Board and it would have been quite inappropriate to hand that over to the Medical Research Council. On the other hand, the radiobiology work of the MRC contributes to radio medicine and the avoidance of damage right across the whole field of nuclear activity. There is another example also in the report of rationalisation suggested between the Fire Research and the Building Research Establishment and the Health & Safety Executives' work on explosion and flame research. From my own visits to the Building Research Establishment, I would feel a little uneasy about them having to tackle the Kings Cross fire and so on. Are you aware that there is a sharp difference between regulatory and executive functions?

(*Rt Hon David Hunt*) Yes, and I must take that into account.

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[Dr Bray *Cont.*]

Chairman: May we come to the final question on international comparisons which closely follow some of the recommendations made? Mr Williams?

Dr Williams

160. During an earlier inquiry we visited Germany and Japan to look at some of their top establishments for research and development and I think we were very impressed by the technology transfer institutions and the strong role taken by central government and by their local government, the Landers in Germany. This area of government research laboratories is very much of a similar character in that they have very good links to higher education, to government and to industry. So in a sense, my question is both a question and a plea, that is that the work that they do is extremely important—critically important—to industrial innovation and to our success as an economy and any savings that are made here should be reallocated within this circle. If there were to be cuts in this area, do you acknowledge that that would put us internationally at a competitive disadvantage?

(*Rt Hon David Hunt*) Yes. I am very interested to hear the experience the Committee has had. I have just, Sir Giles, been to Israel. I went to the Technion where there is a very highly structured technology transfer mechanism for putting together the scientist, the industrialist and the financial adviser to take

forward the invention into development and through into production. There is a nursery environment to start the individual concerned in the direction of development. I think we can learn a lot from looking around the world. I do not think we should underestimate the fact that we have made a lot of progress in this area, particularly over the last few years. But there is more to be done and I am always concerned to ensure that whatever resources we have, we spend them in the wisest possible way. Certainly I believe we need to make sure that we have the right environment to take forward the necessary mechanisms on technology transfer and that is something I have already discussed with the President of the Board of Trade and other colleagues. It is certainly something I want to reflect upon.

Chairman: Thank you, Chancellor, for coming so early in your time to be cross-examined and to answer our questions. I think you will have gained from the Committee's questions today the view that we are a bit anxious about this particular Scrutiny and we have some fairly strong views expressing that anxiety and, in some cases, expressing our resistance to what might be proposed. So you will no doubt be equally appreciative of having an open mind when you come to receive our report in due course. Thank you very much, Chancellor, and thank you, Sir William, for being with us again today.

APPENDICES TO THE MINUTES OF EVIDENCE

Letter to the Clerk of the Committee from Sir John Kingman FRS, Vice-Chancellor of the University of Bristol (25 July 1994)

Thank you for your letter about the enquiry by the Science and Technology Committee into the efficiency unit scrutiny of public sector research establishments. This is a matter of considerable importance to major research universities like Bristol, which already collaborate closely with nearby research establishments.

In our case the main example is the Long Ashton Research Station of the BBSRC, which is indeed on University land and has a departmental status in the university. We shall keep closely in touch with the Research Council in case there is any suggestion of its privatisation.

In principle I welcome the suggestion that transfer to a university should be one option open to the public sector, but there are considerable dangers. Such transfer would normally be accompanied by staff reductions and other measures to increase efficiency, and the university could not take responsibility for redundancy and other payments. The difference in salaries and conditions of service, and in particular the different pension schemes, need also to be taken into account in the terms of any transfer.

Much of the attraction of privatisation to the Government is that it offloads commitments and risk on to the private sector. A profit-making company can often envisage this, but a university is unlikely to be in a position to absorb such costs and has no profit stream against which to set the increased risk.

For this reason the terms of transfer would need to be much fairer than would normally be the case, and this might reduce the attractiveness to the Department or Research Council.

If I can be of any assistance to the Committee in this matter, whether as Vice-Chancellor or as a former Chairman of a research council, do let me know.

Memorandum submitted by the University of Bath (23 September 1994)

THE EFFICIENCY UNIT SCRUTINY OF PUBLIC SECTOR RESEARCH ESTABLISHMENTS

The University wishes to comment on three areas:

1. Privatisation/transfer of PSREs to universities
2. The proposed new organisation structures/Directors of Rationalisation
3. Commercialisation of the customer-contractor relationship and full costing of research bids.

1. Privatisation/transfer of PSREs to universities

In this University's view, the Efficiency scrutiny suggests far more complexity in the future structure of Government financed research than is necessary.

Whether the research to be performed is long term and fundamental in orientation or short term and applied in nature is not relevant to the design of the basic structure for delivering research. It can all be contracted out provided that both universities and companies are permitted to bid for work. Government departments and the Research Councils as the purchasers of research from universities and private sector institutions can simply have the responsibility to fund whatever research they like within their own prescribed objectives and parameters. If deemed appropriate Research Councils could always emphasise fundamental research while Government departments commission more applied work. Moreover, purchasers do not necessarily purchase just the cheapest offering; it is quite possible to have purchasing criteria which allow for strategic concerns. For example, one criterion might be the need to maintain a national presence in certain types of research, by choosing to locate certain types of work in universities.

We believe, therefore, that there is no fundamental reason why all PSREs should not be disbanded and their work contracted out. Of course, as in other contracting arrangements in the public sector, the university or private sector corporation might offer to take over existing GRES in order to put itself in a position to satisfy any contract won. If more complexity than this is required, we have seen no convincing arguments in the documents presented to us.

2. New organisational forms for GRES and Directors of Rationalisation

If the position proposed in the previous paragraph were accepted, the proposals about both organisational change of the GRES themselves and the alternative of employing Directors of Rationalisation are redundant. Even if our views as indicated above were not adopted, we would be against the creation of Directors of Rationalisation with no executive power. In fact we are amazed that this should be a serious proposal. In our view that would be a recipe for confusion over who is responsible for managing what. If some GRES are to be retained, the Government should decide first, perhaps advised by consultants, what degree of rationalisation is required so that the appropriate structures can be devised and executives given clear directives and accountabilities. We repeat, however, that our preferences is for the contracting out of all GRE research services.

3. Commercialisation of client-customer relations and full costing of bids for research

The fact that this question is posed at all rests on a failure to distinguish properly between prices and costs in a competitive market. A market bidding process assumes that each bidder will offer prescribed services at whatever price it thinks is competitive in order to win the contract. Universities might be foolish if they often bid at prices which do not cover their costs, but surely the point of market competition is that participants must be free "to be foolish" if they wish or, more precisely, to decide for themselves how to ensure that their total revenue covers their total costs. It might be argued that some contracts are better suited to a cost-plus basis because of the uncertain nature of the work involved such that no university or company would be prepared to bid on a fixed price basis. Even in that situation, however, the purchaser will want to see that the supplier does not overstate his costs in claiming payment. We don't see why the purchaser should be bothered if the supplier *underclaims*. The argument companies put forward about "level playing fields" is irrelevant. The essence of market competition is that companies themselves seek to acquire some distinctive competitiveness on either price or quality of goods or services. If the purchaser insists on a minimum price, this reduces the effectiveness of the market mechanism.

Memorandum submitted by AEA Technology (20.9.94)

AEA Technology welcomes the report as such a review is well overdue. We agree with the general thrust of separating further the role of government as customer. We have no comments on the specific recommendations which we regard as reasonable except for the remarks on organisational structures. In view of the international nature of science and the effectiveness of modern communications systems, we do not see the sense in the proposed model 2—the creation of geographical based groupings or establishments. We much prefer model 1—groupings by market sector technologies. In AEA Technology we have moved from a geographic structure to a unified business structure operating from six sites within the UK. This has worked well and has led to more efficiencies by reducing duplication and internal competition.

As a major player of science and engineering services, AEA Technology welcomes opening up the market for science and technology in the UK, but for reasons of efficiency and continuity, this should be arranged within a "level playing field" in terms of both access and cost. The market testing programme, if carried through rigorously, will help with the former but there are difficult issues of overheads, core funding, cross subsidies etc in connection with the latter which will need continual re-examination and adjustment.

We suggest that this scrutiny report would be strengthened by some supplementary study. For example, it did not include MoD agencies such as DRA who are now major players in both the defence and civil research sectors and whose wider role should be considered as part of the overall picture. Equally, there are wider European Union issues as Research Establishments are differently structured and funded in different countries and yet the market for science and engineering is increasingly open to cross-country competition or co-operation.

Memorandum submitted by the Biotechnology and Biological Sciences Research Council (4.10.94)

BACKGROUND

1. The Biotechnology and Biological Sciences Research Council (BBSRC) was formed in April 1994 by combining the resources and programmes of the former Agricultural and Food Research Council (AFRC) and the biotechnology and biological sciences programmes of the former Science and Engineering Research Council (SERC). Both AFRC and SERC were wound up on 31 March 1994 as part of the reorganisation of research councils that followed the 1993 White Paper on Science, Engineering and Technology—Realising our Potential (CM 2250).

2. The BBSRC's mission is:

- (i) to promote and support, by any means, high-quality basic, strategic and applied research and related post-graduate training relating to the understanding and exploitation of biological systems;
- (ii) to advance knowledge and technology, and provide trained scientists and engineers, which meet the needs of users and beneficiaries (including the agriculture, bioprocessing, chemical, food, health care, pharmaceutical and other biotechnological-related industries), thereby contributing to the economic competitiveness of the United Kingdom and the quality of life;
- (iii) to provide advice, disseminate knowledge, and promote public understanding in the fields of biotechnology and the biological sciences.

3. In 1994-95 the Council's share of the Science Vote amounts to £175 million. BBSRC allocates these funds competitively to support research and postgraduate training in universities and research institutes. The MAFF commissions specific research programmes in the eight research institutes sponsored by BBSRC. In the current year these commissions total £34 million in value. Finally, the Council and its institutes attract an increasing proportion of their research income from industry and commerce, charities, the European Commission and other public bodies, currently amounting to £26 million a year.

4. The Council is currently developing policies and schemes to strengthen two-way interactions between the Research and postgraduate training it supports and the industrial and other users of the research and

scientists and engineers. It is also expanding activities designed to improve the public understanding of science.

5. The Efficiency Scrutiny included all eight research institutes that the BBSRC sponsors and supports, as follows:

Babraham Institute
 Institute for Animal Health
 Institute of Arable Crops Research
 Institute of Food Research
 Institute of Grassland and Environmental Research
 John Innes Centre
 Roslin Institute
 Silsoe Research Institute.

The scrutineers visited BBSRC and each of the research institutes at least once during the four month scrutiny.

PRIVATISATION

6. These institutes are one important component in the range of research structures that the BBSRC Council needs to achieve its mission goals of research and training outputs of value to users in industry, commerce, higher education and Government. Research institutes provide national facilities, eg long-term field experiments of value to environmental and agricultural science and containment facilities for work with exotic livestock disease; they create critical mass and promote interdisciplinary research; and they are internationally competitive in terms of scientific quality and productivity. Through effective links with industry and commerce, institutes play a key role in technology transfer and exploitation leading to wealth creation. Quadrennial visiting groups of scientists and industrialists are a key element in the relationship between the Council and the institutes. These groups provide the Council with a scientific audit, quality assurance and an assessment of the continuing need for each institute.

7. Industry, commerce, charities, the European Commission and other public bodies are important and expanding sources of income for the institutes supported by BBSRC. Five of the eight institutes rely on grants from the Council's Science Budget funds for less than half their total income. Together the eight institutes receive a total of £26 million (24 per cent) in external income; ie, excluding Science Budget and MAFF commissions. All industrial contracts are priced on a full cost return basis. Funding by industrial users promotes relevance, two-way technology interaction and commercial take-up and exploitation.

8. To achieve its own mission the BBSRC needs the strategic network of institutes to remain in the public sector, but with independent legal status and directors, a broad and diverse customer base (including BBSRC) and an arms' length relationship with BBSRC as sponsor.

TRANSFERS TO UNIVERSITIES

9. Seven of the eight institutes sponsored by BBSRC have formal links with a particular university; several laboratories are located on a university campus; one, the Long Ashton Research Station of the Institute of Arable Crop Research, is a department of the University of Bristol, which owns the property and employs the staff. These links encourage institute staff to do undergraduate teaching; they also facilitate joint postgraduate training and promote the sharing of facilities.

10. Equally, institute scientists have extensive national and international collaborative research links based on common skills, interests and goals. All the institutes have many short-term visitors from overseas. The John Innes Centre, with the Max Planck Institute in Cologne, leads the EC AMICA research programme in plant molecular biology.

11. The BBSRC attaches great importance to links between the institutes it supports and universities—the two components of the science and engineering base. Where they are not yet fully developed, the Council will encourage further formal links between institutes and universities, as envisaged in Recommendation 4 of the report. But such links must complement, not replace or diminish, national and international scientific collaborations and networks.

12. Because the institutes it supports are already linked closely with universities and involved in joint postgraduate training and research activities, there seems little to be gained from transferring them to university administration. The Council would oppose any ad hoc transfers to universities, as appears to be proposed in Recommendation 3 of the scrutiny report. It is not the traditional role of universities to plan and sustain long-term, mission oriented research. Opportunistic transfers could lead to a loss of mission, continuity and long-term vision. They could also be costly if accrued superannuation rights of any transferred staff were crystallised.

RATIONALISATION

13. The scrutiny's case for rationalising present institutional structures rests heavily on their identification of perceived skill bases, facilities and collaborative links. But such plurality is to be expected in the vast, rapidly developing fields of biological sciences and biotechnology. A true test of duplication would require a detailed comparison of scientific objectives and approaches in the 53 PSREs under scrutiny as well as in universities and other institutions. That was beyond the scope of the scrutiny.

14. The BBSRC has inherited a programme of institute restructuring started by AFRC in 1982. That rationalisation was driven by a combination of new scientific opportunities, changing customer requirements and reduced funding. Over the past 12 years seven major institute sites and three experimental farms have been closed; one further site closure is planned. Institute staff numbers have declined from 6,300 in 1983 to 3,500 at present, 700 of whom are on short-term contracts. Gross costs of capital investment and staff transfers and redundancies so far amount to £125 million.

15. Thus the financial costs of institute restructuring are high and implementation requires a considerable managerial effort. All this emphasises the need to calculate overall costs and benefits before embarking on the sort of changes implied in the scrutiny report. In the time available the scrutineers were unable even to make the preliminary calculations needed to indicate that rationalisation is necessary, feasible or cost-effective.

16. Because of restructuring initiatives by AFRC over the past 12 years (and similar developments in Scotland by SOAFD) the potential for achieving further efficiency gains by rationalising agricultural and food research institutes in England, Wales and Scotland is small.

ORGANISATIONAL STRUCTURES

17. Model 1, based on organisational groupings to be parented by SO, NERC, BBSRC and MAFF, includes a biotechnology and biological sciences grouping of institutes with expertise and facilities consistent with BBSRC's mission, which embraces the entire UK. Both HRI and NRI are appropriately included as they need strong links with the science and engineering base. And there are already very effective links between the institutes sponsored by BBSRC and the SABRIs, including common terms and conditions for staff. The BBSRC and SOAFD also collaborate to ensure scientific complementarity and common approaches to scientific assessment of programmes in these two families of institutes.

18. On the basis of the scrutiny's proposals, however, both Model 1 and the alternative Model 2, based on a Scottish territorial grouping, have weaknesses. Each would create anomalies and discontinuities within the science, notably the environmental sciences. The concept of parenting, on which the organisational models depend, needs clarification, especially as regards the respective responsibilities, authorities, liabilities and influence of the parent organisation and funding agencies. Could a parent organisation such as BBSRC effect the closure of a research institute, which was giving satisfactory service to its public and private sector customers, simply because its facilities duplicated those in another institute or a university?

19. A simpler approach to planning, efficiency and rationalisation could be built on existing ownership and sponsorship arrangements. Over the past decade BBSRC, SOAFD and NERC can all point to a record of progressive change in the research institutes they sponsor. In the case of rationalising the agricultural and food research institutes senior MAFF and SOAFD officials were members of the Council of AFRC and were fully involved in the strategic decisions that mapped out the restructuring programme of recent years. Departmental membership is also a feature of the Council of BBSRC; MAFF, SOAFD and DTI each nominate an official to be appointed as a Council member. For the biotechnology and biological sciences sector, therefore, arrangements are already in place which could achieve the Levene/Stewart goal of "bringing together currently fragmented responsibilities". In addition, as part of its responsibilities for co-ordinating Government policy on science and technology the OST could take a broad view of PSREs and their facilities that cross the boundaries of departmental or research council ownership or sponsorship boundaries. A model involving dynamic evolution under present ownership arrangements should not, therefore, be discarded.

20. The proposed Directors of Rationalisation is a weak alternative. Lacking resources and influence, they would not be well-placed to analyse options for rationalisation or argue for their adoption. Experience of AFRC/BBSRC shows that planning and implementation of structural change are likely to prove more effective if they are internalised, rather than being the responsibility of a separate layer of senior management.

CUSTOMER-CONTRACTOR RELATIONSHIP

21. Over the past decade AFRC has increasingly encouraged competition between its university and institute research constituencies. Directed research programmes on plant molecular biology and stem cell biology were opened up to both communities, grant applications being considered on a level playing field. Earlier in 1994 BBSRC took competition a stage further by inviting institutes of other research councils, SABRIs and GReEs to submit research proposals within a new programme of animal and plant genome research.

22. But there is a potential conflict between a truly open research market and the need to maintain and develop the science and engineering base in universities and research council institutes. Within the science and

engineering base the dual support system requires a rational balance between research support by the HEFCs and by the research councils.

23. Reciprocity would be an important issue for BBSRC if there was a further migration to opening up research council funds to a wider range of contractors. The university and institute research communities who traditionally look to BBSRC should have equivalent access to the R&D funds of Government departments such as MAFF, DoE, DoH and SO.

24. The BBSRC agrees that MAFF funding of research should be put on a proper contractual basis with institutes (Recommendation 31). But the Council does not accept that present commissioning arrangements lead to "poor responsiveness to customer needs". On several occasions over the past decade MAFF commissions with AFRC/BBSRC have been reduced and redirected significantly, with costly staff losses, as the Ministry pulled out of near-market research and increased its requirement for research relevant to environmental and welfare issues, BSE, novel crops and non-food uses of crops.

Memorandum submitted by the University of Surrey (7.10.94)

1. LABORATORY OF THE GOVERNMENT CHEMIST AND THE UNIVERSITY OF SURREY

Following recent discussion between the University of Surrey (represented by the Vice-Chancellor, Senior Pro Vice-Chancellor and Head of the School of Biological Sciences) and the Laboratory of the Government Chemist (represented by the Government Chemist and Director of Bioscience and Innovation), opportunities were identified for the two institutions, who are geographically close, to enhance their co-operation in future.

The University has a large School of Biological Sciences which has international excellence in pure and applied research toxicology, microbiology, food science and nutrition. A number of academic Departments in Engineering, Physical and Biological Sciences and the Robens Institute of Industrial and Environmental Health and Safety are engaged in professionally accredited teaching and heavily-sponsored research in different aspects of the environment: from environmental chemistry and pollution (including dispersal of pollutants in air and water), water quality and environmental biotechnology (particularly the impact of genetic engineering).

The Laboratory of the Government Chemist is an executive agency of the Department of Trade and Industry and a leading chemical science laboratory with a wide range of Government customers for services in forensic science, health, food and environmental safety. It has a central role in the validation of the chemical and biological methods used to inform regulation in those sectors, and in fostering quality in analytical measurement.

Particular areas of co-operation envisaged include:

1. Food microbiology and monitoring.
2. Consequences of genetic engineering in the environment and food chain.
3. Novel methods for the detection of toxicants.
4. Development of short and postgraduate courses on analytical procedures.

It is planned that the two sides will bid for joint funds for some projects and these are seen as a formative basis for the evolution of a strategic liaison between our two institutions.

2. INSTITUTE OF FOOD RESEARCH AND THE UNIVERSITY OF SURREY

The University of Surrey is developing the concept of a National Centre for Human Nutrition and Food Science. We believe that the natural location for such a Centre is at Guildford where the University has internationally recognised excellence in education and training in these disciplines. Both nutrition and food safety account for substantial components of research of the School of Biological Sciences, with all nutrition research activities in the University and Royal Surrey County Hospital Trust currently co-ordinated within a School of Biological Sciences-based Nutrition Science Research Unit. This unit already has a number of direct and active collaborative research activities with the Institute of Food Research at Norwich and the Head of Human Nutrition (Dr Peter Aggett) has been appointed as a Visiting Professor to the University of Surrey.

Particular areas of current and developing co-operation include:

1. Diet and health, especially the molecular and genetic basis of diet and health interactions: the cellular and molecular basis of nutrient requirements.
2. Food safety and quality, especially the cellular and molecular mechanisms of metabolic influences of dietary nutrients, toxicants and anti-toxicants.

The University of Surrey is uniquely placed to transfer these collaborative research activities into training programmes in food, nutrition, diet and health in relation to the food manufacturing and retail industry, as well as in primary and secondary health care.

The Laboratory of the Government is strong in nutrition and food science and could also contribute to the centre.

Memorandum submitted by the University of Warwick (7 October 1994)

The University welcomes the Scrutiny report, and the possibility of greater privatisation of some Research Establishments. We wish to comment primarily on those recommendations which relate to university/institute links.

Recommendation 3. Departments and Research Councils should routinely examine the potential for transferring PSREs to universities (para 3.11).

Recommendation 4. PSREs should, within two years, develop effective formal links with universities where these do not exist at present (para 3.12).

Recommendation 8. In their responses to this report, Departments and Research Councils should publicly declare themselves open to approaches from private sector firms or universities wishing to discuss the potential for taking on some or all of the activities of individual PSREs (para 3.8).

The University strongly supports these recommendations. There are clear benefits to be gained from close institute/university links, providing the partners are chosen carefully:

- as the Scrutiny report recognises, there can be significant synergy between the research programmes, with appropriate transfer of, and cooperation between, staff, sharing of research facilities etc;
- there can be considerable advantage in relation to teaching and research training. The university can help ensure a flow of younger research workers; the institute provides a different context within which training can be undertaken;
- the coming together of two different kinds of organisations requires each to develop new perspectives and ways of working. The institute benefits from academic strengths not only in the immediately relevant disciplines but, for example, in business studies, sociology or economics. The university is required to think more about research management and planning, and the institute's sectoral contacts can help ensure relevance to wealth creation etc in the university's programme.

The attractive feature of these recommendations is that there are genuine benefits to be secured on both sides, but to be fully realised they need a more formal structure than is provided by the many loose associations currently operating. Formal links, preferably based on a single organisation, would allow these advantages to be planned and achieved as a specific objective, rather than simply relying on aspirations which can be negated by conflicting demands.

The University of Warwick would like to see the possibility of closer links considered for all relevant institutions and universities; not all institutes were included in the Scrutiny study and it is difficult to see why some—for example the National Institute for Medical Research—were excluded. For its part, Warwick is already in discussion with appropriate institutes, in accordance with the Scrutiny recommendations.

Recommendation 27. Research Council should declare themselves open to applications from all competent suppliers, including GRE's, institutes of other Research Councils, independent research associations and the commercial as well as the academic private sector (para 7.3);

Recommendation 28. OST should review with customers in two years' time the extent to which HEIs are quoting for work on the same full economic cost basis as PSREs (para 7.4).

The University welcomes the concept of greater competition for research funding, with decisions taken on the basis of excellence, but—as the report recognises—care is needed to ensure the playing field is level:

- if Government Research Establishments etc are to compete for Research Council funds, alongside universities, this should imply an end to the current block funding arrangements from Departments, and an appropriate (DR-like) transfer of funds to the Research Councils; or that universities have full access to bidding for all aspects of Government research programmes including those currently reserved for GREs;
- on costing, the University of Warwick charges full overheads wherever possible. There have been cases where a Department has asked the University not to include full overheads, because it received HEFC,E funding for premises etc.

A further benefit of the closer integration of universities and institutes, as recommended in the Scrutiny report, would be that some of these questions about levelness of the playing field would be alleviated.

Letter to the Committee from Alun Jones, Chief Executive of The Institute of Physics (7 October 1994)

MULTI-DEPARTMENTAL SCRUTINY OF PUBLIC SECTOR RESEARCH ESTABLISHMENTS (PSRE's)

Thank you for the invitation to comment on this report. As a leading UK scientific institution, with a membership of over 20,000 physicists, we are well-placed to comment as not only are a number of our members employed in PSRE's, but over 50 per cent of our members are in industry and thus have an awareness of the activities of this important sector of the R & D community.

Against this background, we welcome the initiative of such a review as the growth and programmes of PSREs have arisen from a wide variety of factors which need to be examined in the present context. It is to be expected that there is some scope for rationalisation in order to improve synergy between establishments and reduce administrative overheads. However, we do have some major concerns on the content of the report and its recommendations.

Firstly, whilst recognising that the scrutiny had to cover many sites and establishments and be undertaken in a short time scale, we are left with the impression that it was a "bottom-upwards" exercise which did not fully appreciate the role and contribution of the PSREs which is often distinct from that of universities and industry, although obviously requiring good linkages to both. There seemed to be little recognition of their complex relationships with industrial innovation and the fact that these are dynamic and changing with time. The role of PSREs involves an understanding of relevant basic research in their field and, where appropriate, the creation of a critical mass of R & D in relation to the perceived evolutionary path of industry, usually in an international context. Work on instrumentation, software, standards, etc has a considerable leverage effect on industry, which is, in practice, unlikely to be able to justify such work on its own account at an early stage.

Secondly, although we have already agreed that there is some scope for rationalisation, the tenor of the report is a search for short-term efficiency benefits in order to reduce Government expenditure at all costs. Core scientific competences and the place of PSREs as centres of excellence could be threatened by short-term market-orientated management policies and their future should be set in the broader context of a scientific and industrial strategy for the UK. By this, we do not imply a rigid framework, but the current OST Technology Foresight Programme, which is intended to provide a guide for optimising the deployment of UK resources, could be very relevant.

The PSREs are currently organised and funded in a great variety of ways and it is likely that no single ideal model exists. There is, therefore, a need to take an overall view to optimise relationships and thus neither market-sector nor geographic groupings provide a satisfactory solution. Incorporation in universities may be appropriate in a few cases, but not all. Therefore, of the implementation options mentioned, we would favour the choice of "Rationalisation Directors" to give the necessary flexibility. However, we would again emphasise that they should operate in the context of the UK's longer-term industrial needs.

We recently commented on the specific proposals concerning NPL which illustrate the complexity of the factors involved and if you would like us to elaborate on this or any of the other points we have made, we would be glad to do so.

Memorandum submitted by the Institution of Professionals, Managers and Specialists (10 October 1994)

EXECUTIVE SUMMARY

1. The Institution of Professionals, Managers and Specialists is the trade union which represents 90,000 scientific, technical and specialist staff in the Civil Service, related public organisations and an increasing number of private sector companies. This includes the scientific, technical and other specialist staff in the PSREs covered by the Efficiency Scrutiny, with the exception of the Medical Research Council. IPMS covers specialist grades at all levels with members ranging from assistant scientific officer and equivalent to chief executives and directors of PSRE's and chief scientists in departments. We welcome this opportunity to set out our views on the Efficiency Scrutiny Report.

2. Although the proposal for an Efficiency Scrutiny formed part of the SET White Paper, it has been driven by the Government ideology on privatisation, market testing and reducing public expenditure. Its terms of reference were specifically geared to look at what areas could be picked off for privatisation immediately, if they could not be privatised immediately, then could they be rationalised in a form which saved money and prepared them for future privatisation. The Government is also intent on distancing itself as rapidly as possible from the human and financial consequences of the impact of its free market policies and general funding cuts on research. The Efficiency Scrutiny was to be a major vehicle for achieving these underlying objectives.

3. The IPMS is not opposed to an efficiency scrutiny as such. Indeed we saw some advantage in taking an overview of what is required for efficient and effective delivery of the SET White Paper objectives. In that sense it is a missed opportunity.

4. Despite the general bias of its terms of reference and the timescale in which it had to work, the Efficiency Scrutiny Report succeeds in demonstrating that the picture is much more complex than the instigators of the Scrutiny had supposed, and lays bear some of the contradictions in the Government's approach. For example, it highlights the conflicts between letting the free market rip with research contracts being placed with the cheapest bidder, and trying to develop a coherent strategy for government science. It acknowledges that competition has its limits and may not always be the best means of securing the best value for money. Collaboration, it recognises, is as important as competition. It emphasises the importance of the link between research establishments and departments and lays stress on the fact that "science and technology are integral to the missions of many departments and that changes should strengthen the effective provision of scientific expertise and advice".

5. The Report also lays bear the underlying tension between the ideal of commercialisation which ultimately implies establishments should be growing, dynamic businesses capable of competing on equal terms with the private sector, and the need to control the PSBR. Having posed the complexities and the dilemmas however, the Scrutiny returns to its original brief and resolves these dilemmas in favour of government market ideology, rather than the effectiveness of public science. As a result there is often a disjunction between the analysis and the conclusions which are drawn in the recommendations.

Terms of Reference and conduct of the review

6. The terms of reference were geared far too little to examining the missions and strategic requirements of government science and how they could be met most effectively and far too much to the "bottom up" approach and identifying PSREs or parts thereof which could be privatised and rationalised.

7. The choice of 53 PSREs to be studied was neither logical nor fair. Major areas of the physical sciences were excluded all together as in Defence, or precluded from detailed consideration by pre-emptive separate reviews and decisions in the case of the DTI laboratories, the Transport Research Laboratory and AEA Technology. Although the team had access to the DTI and TRL reviews they were not able to challenge them. As a result crucial areas of the UK public science and technology infrastructure covering 50 per cent of the staff and 60 per cent of the costs of the 53 PSREs were excluded from analysis and debate. On the other hand, the Research Councils were included even though they had only recently been reviewed and restructured by the "boundary commission" following the SET White Paper. Moreover, within that area the main focus was on BBSRC and NERC while the MRC was largely excluded.

8. While the Scrutiny Team is to be congratulated on completing the survey of PSREs to time, the timescale was far too short and gave little opportunity to research the situation in depth.

The vital role of the PSREs

9. We welcome the Scrutiny Report's recognition that PSREs, and in particular government research establishments are intimately related to government policy and its implementation and the recognition that universities, industry and PSREs have very distinctive 'missions'. In contrast the Government seems intent on treating all "suppliers" of scientific services as though they are alike and marginalising the other functions they perform. We would argue, on the contrary, that PSREs, universities and industry should be concentrating on their core missions and open competition between them should be restricted to the areas where it is appropriate and fair.

10. PSREs are a vital part of the government scientific service. They form an integrated scientific network between and within departments and agencies, not simply performing their specific projects but acting as a flexible, wide ranging, readily available and essential government service of independence, integrity and international reputation, for advice, "customer information" and national and international representation. The more "at arms length" these scientists are, particularly if they are privatised, the more difficult it is to sustain these functions.

11. It is as important in government as it is in industry to have scientists and technologists in senior management positions both to act as "intelligent customers" for science and technology whether intra or extra mural and to add the scientific dimension to general policy making.

12. On all these counts it is vital that there should be a "critical mass" of SET staff within the government machine. We are pleased to note that the Scrutiny Report takes on board many of these concerns and does recognise the important role which PSREs play in the operation of government science. We particularly welcome recommendation 29 on the exchange of staff between PSREs and departments, and 32 on the need for departments and PSREs to work closely together on long term needs.

Contributions to the "public good".

13. Much of the scientific and technical work performed in the public sector whether in RCIs or GReS is done there because the private sector is not interested, it does not make a profit, or doing it in the private sector would raise conflicts of interest. This area of work which includes statutory and regulatory duties therefore has to be supported by public funds or it will not be done at all.

14. Many PSREs particularly in agriculture and industry play an important bridging role between basic research and application and often have the ability to range across the spectrum within individual PSREs. The Scrutiny Report's silence on the decision to privatise the DTI laboratories where this role is important and the absence of comment on the technology transfer role in general, indicate a lack of concern by the Scrutiny on this vital aspect of wealth creation.

Statutory duties

15. Many statutory and regulatory functions have a substantial scientific and technical component. These need to be carried out within government and in close interaction with departmental policy making. They require long time scales, continuity, independence and integrity par excellence. Privatisation of such services could be highly prejudicial to the public interest.

16. The Scrutiny Report seems to accept these arguments in that it allocates many of these duties to the "core" or "front line" tasks which it suggests should remain "in-house" but again it does not apply this thinking to the proposals to privatise LGC and NPL.

Funding

17. IPMS accepts the need to achieve effectiveness, efficiency and good value for money. There have already been major improvements. Indeed the SET White Paper accepts there is little need for major change. In reality the major purpose of the scrutiny is that through rationalisation and efficiency measures the PSREs should be slimmed down to fit the much reduced funding available. It is the issue of funding which is driving the scrutiny but ultimately efficiency improvements will not be able to bridge the gap between what the PSREs need and what the Treasury is willing to provide. The projected decline in public funding will need to be halted and reversed, otherwise the PSREs will not survive in the longer term.

18. Many of the recommendations will not aid efficiency and will ensure that more funding is devoted to "overheads" and less "to the delivery of good and effective science."

Privatisation

19. The Report sets out the criteria to be used in deciding whether PSREs should be privatised. It finds only two early candidates—ADAS and the Building Research Establishment where it suggests the DoE should carry out a review. Neither of these cases nor those PSREs where decisions to privatise have already been taken stand up on their own criteria. In all these cases we urge that the decision to privatise should be reviewed and the PSREs retained in the public sector.

20. In the case of the DTI laboratories we also suggest that they be transferred to the OST since they have a value going much wider than DTI who as their owner appears to have no clear mission for them. TRL on the other hand has very close links with the Department of Transport which are highly valued. We hope that the new Minister of Transport will reverse the privatisation decision, but if not then we would advocate that this PSRE also should be transferred to OST.

21. The Report suggests in Recommendation 5 that in reviewing the case for privatisation they should distinguish "front line activities" from their essential supports. We would agree with the Report that "front line activities" should stay in government. But the functions are so interdependent that there is much greater value for money, public good, and support for science in policy making to be obtained from keeping the full range of functions together in the public service. Moreover, as the Team themselves acknowledge it is difficult in practice to separate them.

22. We totally oppose recommendation 8 that PSREs should declare themselves open to takeover either in part or as a whole. This is a recipe for fragmentation and contradicts the Report's statements elsewhere about the importance of a clear strategic view as well as jeopardising internal synergies and "critical mass".

23. As far as recommendation 9 is concerned we accept the need for a long term strategy and organisational and funding strategies to suit. While we do not accept that the identification of privatisable parts can be made for all time, since government needs and priorities may change, we do endorse this recommendation insofar as it attempts to deal with the situation where long term candidates for privatisation such as NEL are so neglected that they are in danger of losing viability all together.

24. In short, on the question of privatisation we agree with the CBI and the Royal Society that privatisation offers neither a feasible nor desirable option even if conceived in the narrow terms of reference set by the Scrutiny Team, and certainly not if wider considerations of the public good and good value for money for the taxpayer and the intangible benefits of PSREs to Government in general are taken into account.

Links with Universities

25. We welcome the recommendation that formal links should be developed where they do not already exist. But we have serious reservations about the transfer of ownership to universities.

26. The core mission of GRES and to a lesser extent RCIs differ significantly from universities and the different mission of universities carries with it distinct forms of organisation and funding which would not be suitable for PSREs. There would also be serious loss of synergies within government and for both government departments and research councils the loss of strategic control of resources, objectives and priorities.

27. Nor would university ownership solve the major funding problems long term. They would still be dependent on the "dual funding" mechanism and departmental commissions on which they already rely. The only advantage would be the freedom from PSBR rules, a problem for which we believe there are alternative answers.

28. On the specific case of NRI and the Greenwich University led consortium there is a major danger that NRI's mission towards the Third World would be lost in the process of such a merger.

Rationalisation models

29. IPMS does not accept that the Report has made a convincing case for re-organisation in general or for the specific proposals which it puts forward. There is no perfectly rational structure which will be right for all time particularly in a dynamic area like science and the cost of rationalisation can often outweigh the benefits.

30. In searching for ways to breach the current brigading of PSREs by research councils and departments it concentrates far too much on the minor areas of supposed "overlap" and cross boundary synergies while ignoring the much greater synergies within each current organisational boundary.

31. We welcome the rejection of the Civil Science Agency approach and the assertion of the need for a strategic approach. This, taken together with the acknowledgement that links between departments and GRES are vital, adds weight to our view that the strategic thrust of any rationalisations which do need to be made should be carried through by the research councils themselves and by those departments such as MAFF, the DOE and the Scottish Office who have a very clear idea of the mission they wish their GRES and RCIs to perform.

Directors of rationalisation

32. Cross departmental rationalisation should form part of the normal perspective, aided by competitive pressures for survival and the mechanisms of Technology Foresight and the Forward Look. An oversight role should be played by the OST.

33. While this is a preferable alternative to structural upheaval it is difficult to see why these functions cannot be carried out by the DGRC, the CSA and OST.

34. We see no reason why the PSREs should not continue with the current diversity of ownership models, particularly as developed within the research council area, nor do we see why the majority of GRES which are "next steps" agencies should not continue with that form of ownership. There are improvements to be made in increasing effectiveness and efficiency and attracting more funding from the private sector, but these can be applied to agencies without totally transforming their ownership structure.

Supplementary mechanisms

35. Of the supplementary rationalisation mechanisms to aid efficiency we welcome the recognition in recommendation 13 of the need for a strategic co-ordinated customer view to avoid wasteful competition, and its support for collaboration. We also welcome the practical proposals in recommendations 17, 18 and 20 for enhancing collaboration. Such measures will enable PSREs to respond to the changing environment without the upheaval of large scale re-organisation.

Customer-Contractor relationship and commercialisation

36. We welcome the recognition that the open market for research does not always lead to efficiency or good value for money and welcome the spirit of recommendation 26. Clear criteria should be sensitively drawn up to clarify which areas are suitable for competition and to ensure a "level playing field".

37. There is general concern that contract based research may lead to "short-termism" and an inability to refresh the broad intellectual capital of the PSREs. Recommendation 27 that Research Councils must monitor the situation to ensure that the science and engineering base in PSREs is not undermined by too wide an extension of open market principles without adequate safeguards.

38. We are pleased to note that recommendation 32 sees no need to insist on total institutional separation of "contractor" PSREs from the "customer" departments or research councils and we welcome the support it gives to customers and contractors working closely together to take a "long term view of departmental needs and the part to be played in meeting them by PSREs". Correspondingly we would hope that the PSREs

will also receive long term support from the department and attention to their needs. This should include the sort of long term financial commitment envisaged by Rothschild.

39. We also welcome the general thrust towards increasing the autonomy of PSREs and ability to plan for the longer term, and the plea for Treasury rules to be relaxed to enable PSREs to expand and raise finance.

The role of the Treasury

40. We agree with the Efficiency Scrutiny Report that the ability of PSREs to maximise their opportunities is heavily constrained by Treasury accounting rules and welcome recommendation 35. However, we totally disagree with the suggestion that PSREs which are to remain public sector organisations should have the emphasis placed on economy and limitation of non-government activities, while PSREs designated as potential privatisation candidates would be encouraged to expand their markets and become as fully commercial as possible. In our view the latter opportunities should be provided for all PSREs.

41. There should be a fundamental overhaul of the public accounting system to bring it into line with current operational requirements and the need to make substantial public investment with the ability to mobilise private finance.

The role of the OST

42. The OST is responsible for the overall view of the PSREs and the role they should play in the government's science efforts. While the Technology Foresight and Forward Look processes can provide indicative parameters for what is required, the OST must be strengthened to ensure the necessary mechanisms for effective co-ordination and implementation are in place.

43. We agree with the role foreseen for OST in recommendations 13, 14, 19 and 28 and in 30, 33 and 34 where they need to ensure that PSREs are able to take full advantage of opportunities to expand without PSBR limits imposed by the Treasury. It is particularly urgent that they work with the Treasury to secure the objectives highlighted in paragraphs 38 and 39 above and establish clearer criteria and a level playing field for the operation of the open market for research as indicated in paragraph 35. They also have a responsibility to ensure that the changes made do genuinely strengthen the science and engineering base in PSREs.

44. Nor will the pursuit of the SET White Paper's objectives be achieved without well motivated staff effectively deployed. The greatest incentive to efficiency, effectiveness and willingness to adapt, which scientists in PSREs could have would be for their efforts to be rewarded not by privatisation but by the application of public science for the public good and above all to be fully integrated and valued.

1. TERMS OF REFERENCE & CONDUCT OF THE SCRUTINY

1.1 The Government's case for conducting an Efficiency Scrutiny is set out in the Report in the Summary para. 1 and in paragraphs 1.1-1.3 on the remit and terms of reference. The context of the Scrutiny is that the Government has been reducing the departmental funds available for science and technology and will continue to do so in the foreseeable future as indicated in the *Forward Look*. (see Annex 1.) It is also intent on developing an "open market" in publicly funded research contracts. It intends to achieve these objectives by either closing, "privatising" or rationalising the current facilities, and the scrutiny is one of the mechanisms for doing so. One of the underlying aims of the Government is "to minimise the costs associated with public sector capabilities and ensure that funding is devoted not to overheads but to the delivery of good and effective science". (Para 1).

Terms of Reference

1.2 The IPMS and other civil service unions made clear in their submission to the Efficiency Scrutiny that we did not accept the basic premise on which their scrutiny was to be based. We did not accept that privatisation and the free market in science necessarily does or can produce "a higher quality service in a way that produces best value for money" for its direct customers or for the tax payer.

1.3 In our view, the Scrutiny should not have begun by looking at particular individual PSREs in isolation and "cherry picking" those which either singly or in groups can be packaged most attractively for the private sector and then dealing with the remainder. It should have started with the requirements and functions of the whole multi departmental government science machine and how the objectives can be delivered most efficiently and effectively, taking account of the full range of responsibilities within, between, and beyond departments. It should examine the full range of organisational and ownership options, including the *status quo*.

1.4 As the Efficiency Scrutiny Report itself points out the "bottom up" focus of the terms of reference do not take sufficient account of the missions and strategic requirements of government science. At the end of the day, however, the Scrutiny Report has had to follow its terms of reference. Its recommendations predominantly reflect the requirements to privatise, rationalise and commercialise.

1.5 Its recommendations in the area of strategic "top down" requirements of government science policy as a whole are weak and poorly developed, and do not follow through the points made in its analysis of the issues.

Nor do they meet the requirements mentioned in the SET White Paper para 14 and repeated in paragraph 1 of the summary:

“and the Government’s recognition that science and technology are integral to the missions of many Departments and that changes should strengthen the effective provision of scientific expertise and advice.”

Scope

1.6 IPMS is not satisfied with the choice of the 53 establishments examined nor do we consider it had a fair or logical basis. Major areas of the physical sciences were either excluded all together, as in Defence, or precluded from detailed examination by pre-emptive separate reviews, as in the Departments of Transport and Industry (DTI). On the other hand the research councils were included, even though they had only recently been reviewed by the “Boundary Commission”, following the SET White Paper but curiously few from the medical research area, even though that had been left untouched by the “Boundary Commission”. In some cases suggestions are made concerning laboratories not included in the Scrutiny.

1.7 In our initial submission to the Efficiency Scrutiny we said, in line with our view of the terms of reference, that given the importance of implementing a coherent strategy across departments, agencies and Research Council institutes (RCIs), and making the best use of resources, it was important that all potential areas were covered. We listed those organisations which appeared to fall within the definition set by the initial scrutiny paper (see Annex 2). We argued, for example that the Defence area should be included. Defence is the largest single area of R&D expenditure and as the Levene Review (1) points out and most independent observers suggest (2), ways should be found of integrating its work more closely with civil needs.

1.8 Similar considerations applied to DTI who appeared to have been proceeding independently of the SET White Paper and the rest of the civil service. The attempts to privatise the National Engineering Laboratory (NEL), the decision to close Warren Spring Laboratory (WSL) and the review of DTI Laboratories which focussed only on the privatisation option, all appear to have been pursued without reference either to the broader needs of the DTI, such as those set out below under section 2 or of the wider government effort. The review of the Transport Research Laboratory (TRL) also had terms of reference simply referring to the privatisation option and without reference to the implications for the other roles it performs for the Department of Transport or government as a whole.

1.9 This did not mean that all PSREs needed necessarily to be looked at in the same depth but that all needed to be taken into account. For example, as in the case of research councils many agencies had been thoroughly examined at various points over the last few years. But the fact that previous studies had taken place should not necessarily preclude the establishment of interrelationships between and within departments and research councils. For example, while we wholeheartedly sympathise with the sentiments in the Levene review (3) that the research councils should not be burdened with any more reorganisation, it would be wrong to rule out possible options for linkage between RCIs or other bodies within the study if that were the most mutually satisfactory solution in a particular area.

1.10 Suggestions are made for the Met Police Forensic Science Laboratory (MPFSL) although, as the team admit (Annex K para 11) it was not part of the Scrutiny and they were not invited to visit it. The coverage of research councils has been particularly eccentric with few being included from Medical Research Council (MRC) and ex Science and Engineering Research Council (SERC) and little said about those who were (see below). As a result, the team have often ignored major synergies within existing organisational structures while concentrating on often minor cross boundary overlaps. For example, the amount of actual research done at the Metropolitan Police Laboratory is very small as a proportion of the total work, yet on that basis of overlap, reorganisation with another organisation is suggested. The Scrutiny Team did not include the Explosion and Flame Laboratory of the Health & Safety Executive (HSE)—had they done so, even under the hasty scrutiny conducted on the PSREs, they would not have come to the conclusion that there was “overlap” with the fire research part of the Building Research Establishment (BRE).

1.11 There are therefore serious concerns about the balance of the study, including the nature of the sample, as noted above and the variations in depth with which different PSREs have been covered.

Methods

1.12 We are not entirely satisfied either with the way the review was conducted. Many of the problems arise from the fact that three months was far too short a period to carry out a thorough investigation of this scale and complexity, from the narrow scope of the terms of reference and from the other political constraints which surrounded the review. The Team is, therefore, to be congratulated on carrying out the scrutiny to such a short timescale and, despite the political constraints, demonstrating the complexities and contradictions in the current system and the fact that there are no simple solutions.

1.13 As the report points out (para 16) the Scrutiny was carried out under normal efficiency scrutiny procedures. The normal period for a scrutiny is three months but the scope of this particular scrutiny was pretty abnormal and the period of three months far too short to carry out a thorough investigation. In fact the time from the announcement of the scrutiny (early August notice to Secretaries of State, with public announcement in November) to publication of the Report (11 July 1994) was between nine and 11 months

and if the procedures had been more flexibly applied more time could have been devoted to the field work and examining the PSREs and their functions in more depth.

1.14 The original timetable as announced in November was that the “Scoping Study” would take place in November-December 1993 and the three month scrutiny would begin in January and report on 2 April. The terms of reference for the main study and the study plan and list of establishments to be visited were published early in the new year. In fact, the terms of establishments to be visited were published early in the new year. In fact, the terms of reference, although barely changed from the initial version, were not published until 2 February (4) and the Council of Civil Service Unions (CCSU) did not receive the Study Plan containing the details of how the study was to proceed, the timetable and the list of establishments to be visited, until 3 March, ie two months into the scrutiny period (5). The timetable provided is contained in Annex 3. By this time the date for publication of the report had shifted to 29 April. However the timetable for studying the situation on the ground and for consultation with the CCSU was not relaxed and as a result, the timetable for constructing a meaningful response was compressed.

1.15 The trade unions were consulted at the scoping stage, during the main study and on the “emerging findings”, and although the timetable was tight we were given an opportunity at the centre to express our views both on paper and at meetings. For local trade unions representatives, however, it was very different. We had been warned that the team would not have time to meet trade union representatives routinely at every establishment but they would try and meet those who had specific and distinctive issues which they needed to put. In the event the team insisted that all local trade union input should be fed through centrally. This meant that it was distanced from particular visits and therefore less likely to have an impact.

1.16 Correspondingly, the tight schedule meant that in many PSREs there was no time for the team to meet working scientists in the research establishment to obtain their perspective on the issues. The position was described by the President of the Royal Society thus:—

“The contrast between the conduct of the scrutiny exercise and the extensive consultation that preceded and followed the White Paper *Realising our potential* is striking. The Customers for, and providers of, the services now provided by the 53 research establishments must be consulted openly about the scrutiny report’s recommendations before any decisions are taken about whether, or how, to implement them”(6)

1.17 Soon after Sir Michael Atiyah’s statement William Waldegrave announced that there would be a further 90 day consultation period once the scrutiny report was published and assured everyone that the Government had not made up its mind and consultation was genuine. That assurance is welcome but it is still difficult to consult adequately on or to change the general thrust of a report which has been researched in haste and geared to terms of reference which do not adequately address the missions or content of the work being done.

1.18 The methods and conceptual framework used by the team are identified in paras. 1.6–1.9 and elements of it also emerge in more detail in chapter 2 and several of the Annexes. We do have some points about the typologies used to analyse the work of PSREs but these are dealt with in later sections.

1.19 The Scrutiny team decided to divide the 53 PSREs into two broad sectors “Life Sciences” in which there were 37 PSREs, with 15,711 staff, covering £540,288K (40 per cent) of the total costs; and the “Physical Sciences” in which there were 16 PSREs covering 15,630 staff, and £811,219K (60 per cent) of the total costs.

1.20 Although we do not know in detail how much time was spent on each area, the impression is that less attention was paid to the “Physical Sciences” than to the “Life of Sciences”. This is understandable since a large part of that area had already been pre-empted by reviews done and decisions already taken. Although the Team have had access to the reviews, (unlike the rest of us, including the scientific community who are now being consulted on the report), they were not, as Sir Peter Levene admitted (7), able to change them or recommend courses of action which conflict with them.

1.21 This is a pity because the lack of attention to AEA Technology (AEA), the DTI Laboratories and TRL, taken together with the exclusion of the Ministry of Defence (MOD) from the scrutiny altogether, means that a crucial area of the UK Science and Technology infrastructure vital to the UK manufacturing base, and arguably one which is in much greater need of attention, has been largely excluded from analysis and debate.

2. THE ESTABLISHMENTS: OWNERSHIP, FINANCING AND CUSTOMER-CONTRACTOR ARRANGEMENTS, AND FUNDING

2.1 In Chapter 2 and Annexes D, E, F, G and H the report sets out the history and current organisation and functions of the PSREs—the background to the study. In this section we refer to the analysis by the Scrutiny Team but also add our own points about the role of PSREs, to some aspects of which we believe the scrutiny has paid too little attention or ignored altogether.

2.2 It is important to recognise as the Scrutiny does that major advances in efficiency and effectiveness have already been made. Indeed Sir Peter Levene and the SET White Paper claimed that the research councils and the government research establishments (GREs) were working well and only minor adjustments were required. The Scrutiny report itself notes that “there has been substantial rationalisation of civil research establishments over the last ten years or so, . . . and duplication between establishments is rare” (para. 4). They

mention that a whole range of government initiatives, including "Next Steps" agencies, financial management initiatives and ROAMEs have been applied to PSREs as to the rest of the civil service and NDPBs. In addition the new mechanisms established by the SET White Paper, such as Technology Foresight and the Forward Look also need to be given a chance to work. (Para. 2.6.).

2.3 Thus, apart from the fact that the changes undertaken so far have stayed within departmental or research council boundaries, they appear to identify little general need for further change were it not for the funding issue: "trends in departmental expenditure on R&D/S&T imply a need for further action to ensure that capacity remains in line with demand". (para. 2.3.2). In other words further efficiencies must be made to fit the PSREs to the funding available. Indeed, the issue of funding is driving the scrutiny.

The Establishments and Their Activities

2.4 We are pleased to see that the Scrutiny Report emphasised in the first paragraph of its summary "that science and technology are integral to the missions of many Departments and that changes should strengthen the effective provision of scientific expertise and advice" and that throughout it emphasises the importance of the "demand" side of the equation, whereas the terms of reference and the "market" approach tends to concentrate on the "supplier" side and look at developments from that perspective. William Waldegrave, when Minister of Science, said many times that it does not matter where the science is done so long as it is done. In our view nothing could be further from the truth. As the Scrutiny Report acknowledges the research councils and government research establishments have different "raison d'être" as their analysis in Chapter 2 and history in Annex F demonstrates. As the Royal Society says:

"Issues of management and ownership are inseparable from issues of mission. An exercise focused on management and ownership is inescapably addressing also the mission of each research establishment and the conditions under which it will be allowed to tackle that mission".

It must be recognised that Research Council Institutes, with their largely responsive and long-term perspectives and investments, differ in important ways from Research Establishments related to Departments other than OST, which tend to have more focused, top-down missions". (8).

2.5 Similarly the universities, which although not part of the scrutiny figure in the recommendations, have a core mission—the provision of skilled graduates and the pursuit of curiosity based research pushing back the frontiers of knowledge, and building the intellectual capital of the nation. Industry, which also figures as the customer of some research and recipient of some grants, as well as the end product of commercial "privatisation", has a different core "mission" still—the need to make a profit on products and services which sell. Although all these types of organisations may overlap to some degree, particularly in the scientific content of their work, they differ in the purpose for which that work it is primarily done. In its search for the "open market" the Government is intent on treating all suppliers as though they were alike and marginalising the other functions which they perform. On the contrary, we would argue that they should be maintaining the primacy of the core activity and introducing competition only at the margins.

The Role of Science in Government

2.6 The role of science in government is distinct from both universities and industry. As the Scrutiny itself notes (paragraph 2.1) PSREs "exist for two main reasons: to provide support for the policy, statutory and regulatory activities of government departments; and to undertake research aimed more generally at improving wealth creation or enhancing quality of life, thus contributing to the maintenance of a strong science and technology base for the UK." These basic objectives have remained fairly constant, although organisational arrangements have evolved over time. As the Scrutiny also points out, although we would not necessarily agree with its detailed typologies, research council institutes tend to undertake more long-term strategic research and technology transfer and GRES to be more intimately related to day to day departmental objectives, but there is considerable variation and overlap depending on the departmental and research council missions. Both provide technology transfer and research for the "public good" but their dominant focus differs.

2.7 GRES in particular form a vital and integral part of the government scientific machine. They provide scientific services for the "public good", technology transfer services (both of these, together with the role of research councils are dealt with in more detail below), and they are intimately related to government policy and its implementation. They are also a vital source of scientific expertise in government decision making more generally.

2.8 Currently the vast majority of "operational" (9) scientific staff employed by the government are in specialist scientific units or agencies; predominantly in the latter. If these were to be hived off or privatised there would be few government scientists left outside the staff in the office of Science and Technology (OST). There would be very few scientists to act as "intelligent customers" for commissioning external contracts and there would be even fewer scientists and technologists to influence the general government decision making process in what is an increasingly technically sophisticated age. Thus there would be very few scientific staff to perform the type of strategic co-ordinating role envisaged by the SET White Paper and to keep the scientific dimension alive in government consciousness.

2.9 The government's underlying capability to offer independent and impartial advice and to respond rapidly to emergencies such as the outbreak of BSE or the threat to the environment posed by the Braer oil tanker incident where research teams and advice can be marshalled within hours depends on rapid co-ordination across and within departments. (10). Few issues, whether identified by scientific discipline or policy orientation fall neatly into departmental compartments. The Efficiency Unit in its recent review of careers also notes that many issues cross departmental boundaries. (11). The removal of links in these chains through privatisation will threaten the capability to respond in these situations.

2.10 Long term strategic R&D is necessary to provide the nation with the capability to deal with short term problems. Looked at from the point of view of an individual laboratory—eg the Proudman Oceanographic Laboratory, recent “emergencies” demanding POL’s R&D expertise are the “Towyn” storm surge (1990), the “Gulf War” (1991) and the “Braer” oil spill (1993). In each case the government department concerned turned to POL for scientific expertise, and this could be provided immediately because of the existence of experienced scientists and technicians, supported by modern technology.

2.11 There should be and in many cases is a close link between departmental policy makers and working scientists whether they be in agencies or in-house research units. Martin Holdgate in his Review of the Scientific Civil Service in 1980 described this linkage very well and there is no evidence that it is less important today.

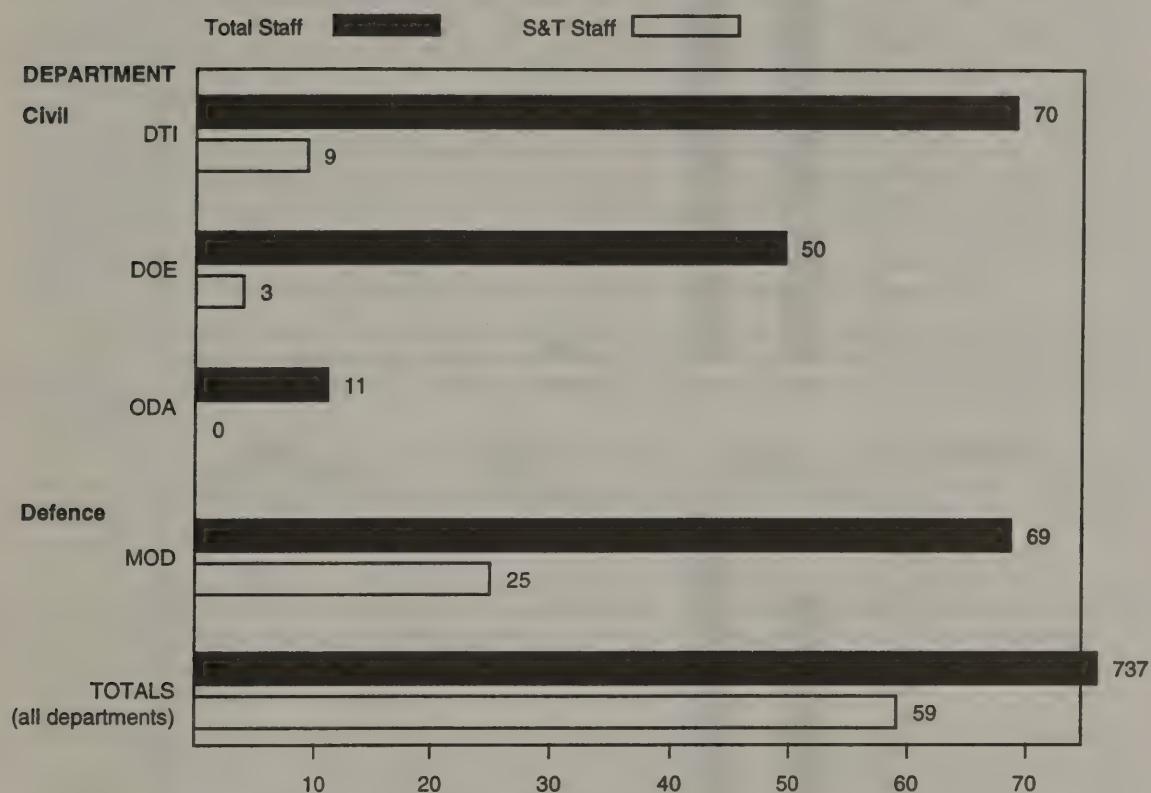
“... Very commonly policy issues arise with an urgency that does not permit new research. Action on them calls for scientists who are sufficiently generally informed to provide relevant advice quickly. The best ways of ensuring that such people exist are, first, to have a sufficiently strong group of technically informed policy advisers within departments—either in specialists units or “bedded out” in policy directorates—and, second, to support them by continuing “strategic” or “objective basic” research by teams in REs working in fields where it is obvious that recurrent policy questions will arise. It is also crucial for the “policy advisers” and “research support” groups to be in close personal contact, for, even if the former have the right expertise and are up to date, their understanding will rarely be so complete as that of the person actually doing original work on the problem”. (12).

2.12 A crucial representational role, both nationally and internationally, is played by government scientists from GREs and research councils. The Government’s scientific reputation for impartiality and integrity which draws heavily on these reserves of scientists is not only important for the government policies being pursued in that context but also helps to promote the general reputation of the UK in the scientific field, which in turn attracts further work to the UK. For example, in the Department of Environment (DOE) those research scientists who attend standards and other international committees, acting as DOE officials in representing the national interest, need to be recognised as experts in their field. To be such an expert not only requires that they have a sound research career in the topic concerned, but they should be carrying out, or otherwise be intimately involved with current research at the “leading edge”. Only with such qualifications can the UK representative’s views carry the necessary weight in the international arena. The more “at arms length” these scientists are, particularly if privatised, the more difficult it is to sustain their depth of knowledge via the interconnections of government science, and the more difficult to sustain the credibility of their contribution or to provide them with the required political ambience. (13).

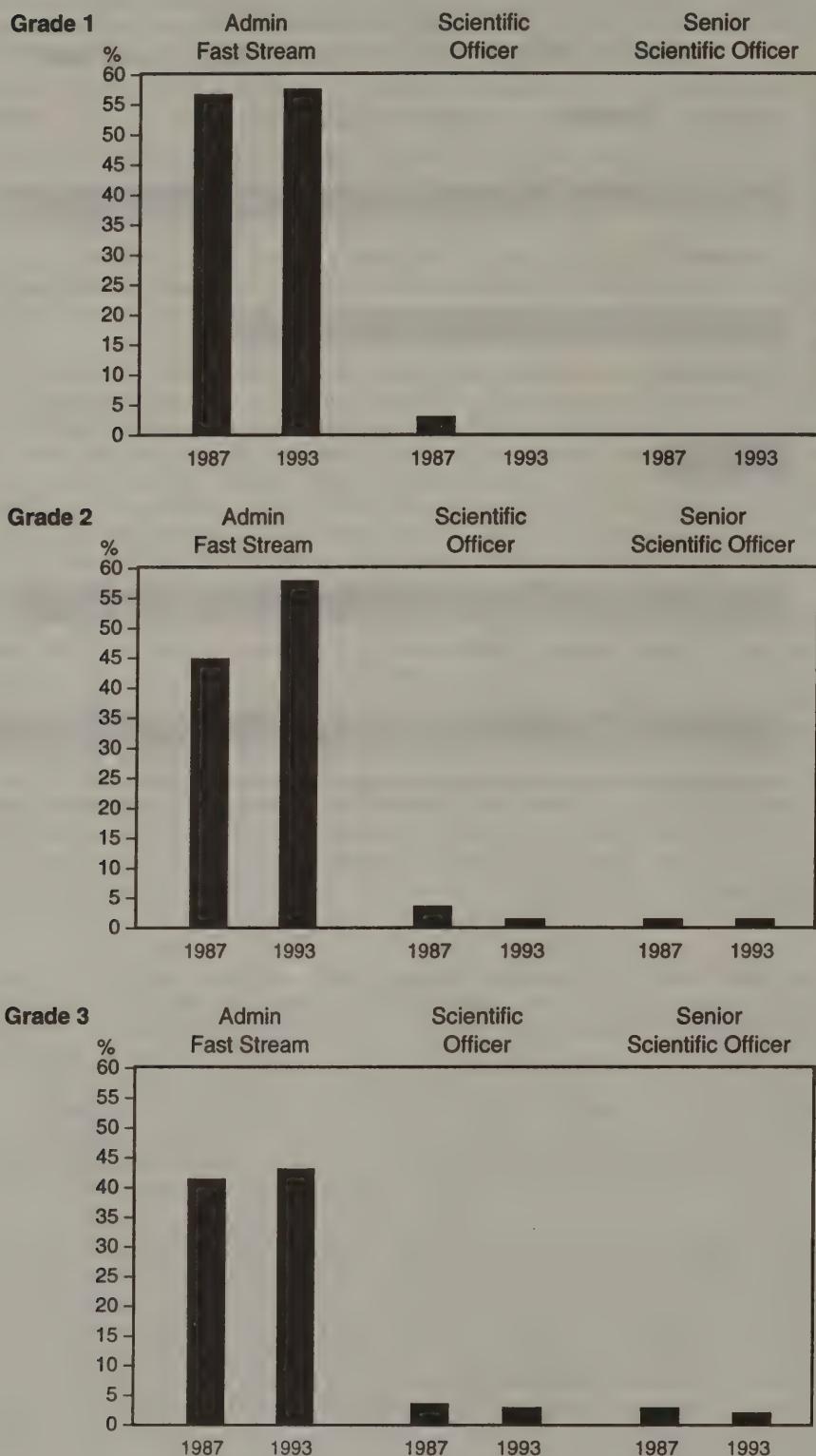
2.13 It is also vital that there should be a flow of high calibre scientists and technologists into senior policy making positions both in scientific and more “generalist” roles because of the increasing technical complexity of many political and administrative decisions. Also with the increased trend in univerity, research council and government research establishments towards competition for contracts, encouraged by UK government policy and the impact of the European Union (EU) public procurement directive, it is essential that the “customers” in government departments should be well equipped to make a fair and scientifically informed selection from among the “contracts” bids. Some departments have already cut back on their internal scientific expertise and there is strong doubt whether many customer departments have adequate ability to decide on which research should be sponsored, and to monitor and control it.

2.14 Statistics show that there are still relatively few scientists and technologists involved in senior policy making positions in the civil service. For example, in the senior open structure (Grade 3 and above) statistics for 1994 show that none of the 20 permanent secretaries in charge of departments were scientists and only 2 had a specialist or professional background of any kind. As can be seen from the Figure on page 12 within the DOE of the 50 staff at Grade 3 or above only 3 were scientists (14), the chief scientist, the head of the Pollution Inspectorate, and the chief executive of the Building Research Agency. At the DTI, 9 of the 70 senior staff were scientists; of these one was chief scientist and 4 were chief executives of research agencies. Evidence from the recent Efficiency Unit Report on Career Management and Succession Planning paints a similar picture—(see Figure on page 13.).

Civil Service Grades 1-3
Number of Staff with S&T background: Total Staff



Grades 1–3: How they got there
Grade on entry to the Civil Service at 1 April 1993 (%)



2.15 Just as research has shown that it is important for innovative and technologically successful firms to have scientists and technologists in senior management positions, so it is equally important in government where general awareness of modern technology and its potential application is crucial to economic success and to the maintenance of "effective demand" for science and technology. (15). Without "scientifically literate" senior decision makers, not only will they be inadequately equipped to commission science and technology contracts, they will not necessarily be aware that such expertise is relevant and both funding and general recognition of the need for the science and engineering base will suffer accordingly.

2.16 There are three main sources from which such 'scientifically literate' senior policy makers can come; from more junior scientists, technologists and engineers within government; through external appointments; and through the generalist 'fast stream' entry. None of these channels are currently working effectively.

2.17 Although direct external recruitment of specialists at senior levels has a role to play, many are likely to be unfamiliar with the Whitehall machine and are no substitute for scientifically expert insiders. Moreover, those who come in temporarily or permanently from the GREs can tap a huge pool of expertise within the GREs on an ad hoc basis. To achieve equivalent coverage and depth of expertise by appointment from external companies or privatised GREs, where commercial confidentiality would be likely to reduce such easy communication, would require a major expansion of HQ policy divisions. There is also a problem in obtaining high quality external entrants because of the continuing and growing disparity in salaries and conditions between the different employment sectors, particularly between the public and private sectors.

2.18 There are still relatively few administration 'fast stream' entrants to senior policy making positions who have scientific or technical qualifications. In 1990-91 only 17 per cent of Administration Trainee or HEO(D)s passing the final selection board were science or technology graduates. (16). This is the same percentage as in 1985.

2.19 The most effective source and one which is endorsed by the efficiency scrutiny on succession planning is to ensure that there is a route to the top for all talents within the civil service and non departmental public bodies (NDPBs) and this should include those, whether scientists or not, who are in agencies and closely in touch with scientific activity in that context.

2.20 The Scrutiny Report does take on board many of these concerns and does recognise the important role which PSREs play in the operation of government science. We particularly welcome recommendation 29 on the exchange of staff between PSREs and departments and 32 on the need for departments and PSREs to work closely on long term needs. However, privatisation would have a minor impact and this is not tackled by the Scrutiny Report (see Section 3).

2.21 In Annex H the Report tries to analyse these government functions by categorising them in terms of their closeness to the core departmental functions. They argue that the "front-line" activities are more "delegate" than "contractor" activities, and thus imply that they should not be subject to the customer contractor principle. They use these categories again in the privatisation and rationalisation context and we will deal with some of their implications there. At this stage, however, we would note that there are problems associated with the analysis and the assumption that the roles can be split. For example, in many cases the individual staff in PSREs will be performing a range of the different functions and there are 'synergies' between them. Also the definition of what is 'front-line' at any particular time will partly depend on the circumstances and the tasks which government is set. As the efficiency scrutiny on succession planning said:

"We have avoided the temptation to define activities as core or non-core. It is not sufficient to say that core activities will remain in Civil Service hands, while non-core activities will be contractorised. What is defined as the core would have been very much broader a generation ago than it is today. The boundary defining what has to be done in Government Departments will continue to shift". (17).

2.22 In our view therefore the GREs should remain close to the departments, whether as agencies or as integral parts of the department. This is the most cost effective way of providing the services because it facilitates the provision of many of the activities outlined above with flexibility and speed of response and leaves the majority of the staff in close contact with ongoing research whether they are doing it themselves or at the end of the telephone line from those who are. To compartmentalise these various tasks would lead to costly duplication, further administrative overhead and less money spent on science. Above all it is vital that there should be a "critical mass" of SET staff within the government machine not only on specifically SET work but also to bring an SET dimension to more general decision making in the Civil Service as outlined above.

Contributions to the "public good"

2.23 Much of the scientific and technical work performed in the public sector whether in RCIs or GREs is done there because the private sector is not interested, it does not make a profit, or doing it in the private sector would raise conflicts of interest. This area of work which includes statutory and regulatory duties therefore has to be supported by public funds or it will not be done at all.

2.24 Public S&T has a vital part to play in both the wealth creation and the quality of life objectives set out in the SET White Paper. As far as wealth creation is concerned, as well as supporting the "science and engineering base" as traditionally construed (ie universities and research councils) the government has a

broader role in providing an infrastructure for technology transfer and for supporting projects in the early pre-competitive stages. Government policy has been focusing too narrowly on "basic research" in universities or research councils on the one hand and "applied" or "near market" research done in private industry on the other and trying to build direct links between them. This process if carried too far may well undermine the UK pure science base. As the Committee's recent Report on Innovation noted—

"we are concerned that Government policy to encourage innovation is focused too much on the Science Base which cannot provide all that industry, especially engineering based industry, needs without abandoning some of its wider responsibilities. Industry provides its own research base, both in-house and through independent research and technology organisations, many government laboratories also provide services quite distinct from those provided by universities. These should be fostered and encouraged, just as such diversity is encouraged in other countries. We are especially concerned that current policy toward sources of technical expertise outside the Science Base may concentrate too much on the immediate needs of government departments, and under-estimate the industrial importance of successful laboratories, whether Government or privately owned". (18).

Government policy has failed to recognise the vital bridging role which the research infrastructure, much of it in RCIs and GRES, between the two poles of "basic" and "applied" research can perform.

2.25 The process of moving from basic research to innovation (defined as realisation into marketable products) can involve a whole number of stages, depending on the nature of the particular innovation in question. It is the later stages of this process such as investment in pilot plant which usually cause the greatest difficulty for UK industry because they involve high risk and high "up front" costs. The level of support for R&D often declines in these critical stages of the innovation process. Several factors are involved in bridging the gap at this critical point in the process, including the provision of "patient money", recognition by industry of the potential of the research, and the capacity in terms of both equipment and intellectual resources to take it on to completion.

Technology Transfer and Innovation

2.26 A good example of a smooth and highly effective technology transfer lies in the agricultural area in England and Wales where the Agricultural Development and Advisory Service (ADAS) transmitted through free advice to farmers the latest developments in agricultural technology, many of them derived from MAFF's own laboratories or the BBSRC. At the same time there was a close relationship between the customers, the advisers and the researchers. Also the innovations spread effectively because there was no secrecy and very few barriers either motivational or financial to the transmission of new ideas. This success in transmitting innovation was a major factor in producing a highly efficient agriculture sector in the UK which by 1990 delivered two-thirds of UK food needs compared to just under half in 1960. In the words of the Priorities Board for Research and Development in Agriculture in June 1990:

"The agriculture and food industries are important parts of the UK economy, contributing around £6 billion and £10 billion respectively. The present efficiency of these industries owes much to the successful exploitation over many decades of the results of Government sponsored research and development. It is vital to UK interests that the agricultural and food industries continue to increase their competitiveness edge and respond to market demands, whilst meeting consumer expectations of greater assurances on food quality and safety, improved animal welfare and enhance protection of the environment".

2.27 The positive lessons of such an arrangement should not be lost. Unfortunately, many of the decisions taken to change that system, including the creation of ADAS as an Agency which gives advice on a fee paying basis, and the plans for its eventual privatisation (see below); and the abrupt withdrawal of "near market" public funding from agricultural research on the assumption that the market will provide for the research if the research is worthwhile, have done so much damage to research in that area and to the transfer continuum between agricultural research and agricultural production which previously existed. Much of the research judged "near market" and therefore no longer financed by government was not taken up by industry. In the June 1990 review the Priorities Board noted that the food industry had shown only a small interest in funding near market R&D—"due in part to the fragmented nature of the industry. In some sectors, most notably eggs and poultry, no mechanism is in place to facilitate the funding process". It continued:

"Even in those sectors with established mechanisms for funding R&D there is an element of risk that the R&D continuum will break down at the point where publicly funded work ends and industry's near-market R&D begins".

2.28 The Centre for the exploitation of Science and Technology (CEST) has identified other sectors where the industry structure is fragmented and composed largely of small and medium sized enterprises (SMEs) so that technology transfer does not operate smoothly. For example, the construction industry consists of hundreds of SMEs and is represented by a large number of professional bodies, trade associations and contractors' associations and is beset by problems caused in part by poor communication. The recent Latham Report "*Constructing the Team*" has drawn attention to these problems and to the significant role which BRE plays in the construction industry.

2.29 The number of companies undertaking genuinely pre-competitive research are relatively few and tend to be the larger corporations which would normally expect to fund and execute this type of research in house. The SMEs which do need assistance actually require more development oriented and "near market" research.

They rarely have the in-house knowledge and resources to be able to form the complex relationships required for pre-competitive collaboration networks such as the LINK programme with the time consuming procedures associated with them. BRE has recently formed the Construction Quality Forum to provide this link and channel for collaborative research within the construction industry.

2.30 PSREs whether they are research council institutes or government laboratories are well equipped to perform the bridging roles between basic research and application. They have the ability to assemble the critical mass of scientific and technical personnel, expertise and physical equipment. They also have the ability within single institutes to range from the basic, through strategic or pre-competitive, to "near market" research. CEST in its "Report of the Working Group on Innovation: The Faraday Programme" in May 1992 recognised that such "intermediate institutions" (they mentioned specifically AEA Technology, the Defence Research Agency, Laboratory of the Government Chemist (LGC), the National Physical Laboratory (NPL), and research council laboratories) had a major role to play in bridging the gap between research and application.

2.31 The SET White Paper accepted the "Faraday principles" and the Government has now accepted that public funds can once again be applied to "near market research", particularly "in cases where the 'market' breaks down eg in generic technologies or where the market is characterised by small firms" (para 2.22). These encouraging signs for more effective technology transfer, however, are marred and possibly rendered largely ineffective by the fact that no extra funding is provided to apply the "Faraday principles". Indeed the DTI funding for its own laboratories and its support of R&D in industry is in dramatic decline. (See Annex 1).

2.32 The Efficiency Scrutiny's silence on the DTI's decisions to privatise NEL, NPL, LGC, AEA Technology, and the closure of WSL are dealt with in more detail in Section 3. But those decisions and the outlook for DTI funding seriously threaten the UK's ability to innovate and to remain internationally competitive.

2.33 The DTI should be playing a major facilitating role in supporting innovation. While we welcome the change to a more proactive approach within DTI as reflected in the SET White Paper and White Paper on Competitiveness (19); its focus on the need to change the culture of industry and the city should not be carried out at the expense of other vehicles for the innovation process which are equally important. The expansion of the DTI Technology and Innovation Policy Division, the placing of some SET staff in other policy divisions (although total numbers of SET staff in DTI HQ have been reduced), and the development of Business Links will not be sufficient to the task. Nor will those innovation awareness mechanisms have sufficient support in depth if the DTI PSREs are privatised and the funds provided for them so reduced that they lose "critical mass".

2.34 As the Committee noted in its Innovation Report government research laboratories are valuable parts of the science base and should not be judged only by their ability to meet departmental needs or attract contract research. The DTI has a responsibility to identify responsibility and maintain the wider knowledge base that industry requires in government laboratories, research and technology organisations (RTOs) and industry itself.

2.35 The Government believes that industry should invest more both intramurally and extramurally and the DTI awareness programme should help. The current situation, however, is that large swathes of industry do not support research, as the R&D Scoreboard shows, and in many cases industry has no clear vision of the research provision required to meet its needs. While we wait for that awareness to be raised core competencies of national importance will be lost and will take a long time to rebuild.

2.36 Similarly the House of Commons Trade and Industry Committee said:

"While we believe that the DTI is right to devote additional resources to technology access. We do not accept that this should mean reduced spending on R&D. Moreover, the planned decline in spending on industrial R&D is greater than the planned increase in support for technology access (table 14). Reduced government support cannot be justified by reference to reduced support by other governments, since UK Government support for civil R&D is already low relative to that in other major industrial countries (except Japan) and industry's own spending is also relatively low. As indicated earlier, improved access to technology is not an alternative to R&D." (20)

They also said, with specific reference to the Efficiency Scrutiny:

"The DTI and the Office of Public Service and Science should co-operate to ensure that the latter's review of public sector research establishments takes full account of the need to strengthen the UK's R&D base." (21).

We do not believe the Scrutiny has taken full account of this need nor has it devoted much attention to this aspect of PSRE activities.

Quality of Life

2.37 Much S&T done in RCIs and GREs is done in the public interest to improve the quality of life such as research on health, safety and environment. Examples include agricultural work at the Institute of Grassland and Environmental Research where the work on clover in grasslands is designed to fix nitrogen from the atmosphere and work on organic farming methods and the natural control of predators to reduce

the need for pesticides. Work of this sort will not be financed by industry, indeed many agro-chemical companies would be determined to resist it. The squeezing of public funds for these projects or the privatisation of the facilities which do the research will not be replaced by commercial investment. Similarly the privatisation of ADAS could lead to a situation where, being forced to charge commercial prices for its services, farmers will turn to commercial agro-chemical companies who would provide free advice but this would be unlikely to be in favour of environmentally friendly farming. Even the current regime in ADAS carries dangers because being forced to charge to cover its costs and thus losing "business" it is having to retrench and thus reduce even further the service it can provide.

2.38 Many examples can also be found in the area of food safety and there is a need to retain "centres of capability" to respond to food safety scares which arise on a regular basis. Recent examples of this response capability are:

- BSE in cattle;
- lead in imported feed stuffs for animals which posed a public health problem;
- patulin in apple juice;
- toxins in peanut butter;
- dioxins in milk;
- hormones in meat.

All of these recent examples of food scare problems required resources in the Ministry of Agriculture, Fisheries and Food (MAFF) and Biotechnology and Biological Sciences Research Council (BBSRC) laboratories to be quickly diverted to investigate and contain the problem.

2.39 Moreover, this research and rapid response is best managed in an integrated public research framework. Animal disease and welfare control policy with monitoring of the effectiveness of control measures co-ordinated by the MAFF Animal Health Centre at Tolworth requires a readily accessible laboratory back-up. The laboratory back-up for the Veterinary Field Service exists in the Veterinary Investigation Service, so far as front-end diagnosis is concerned. The Central Veterinary Laboratory (CVL) as the facility to scale up investigation into new diseases, and develop new methodologies to improve the effectiveness and efficiency of handling existing problems.

2.40 Another area where there would be likely to be a direct clash of interest between the public good and privatisation is transport, a case we deal with in more detail in Section 3. Suffice it to say here that, as in the case of agriculture research, transport safety research has played a major part in achieving the dramatic reduction in road accidents. The fear, therefore, is not simply that future safety research will be prejudiced if privatised but that the Government may be planning a major switch of funds from issues of safety, economy and environmental quality in favour of other concerns such as motorway tolling technology.

2.41 In the words of the President of the Royal Society:

"Again we should remind ourselves that many of these (services) were taken over by the State because (as perceived by the electorate at the time) the privately-run services were inadequate or unsatisfactory. The arguments in favour would have varied but would have included the advantages of unification, public safety and long-term planning". (22).

Statutory and regulatory functions

2.42 Statutory and regulatory functions are among the most longstanding and crucial rules of Government, and many have a substantial scientific and technical component. These need to be carried out within government and in close interaction with departmental policy making. Such functions require long time scales, continuity, independence and integrity par excellence. As the President of the Royal Society points out, regulatory independence becomes increasingly important as more areas of previously state provision eg water, energy, and scientific services themselves are privatised.

"The more services are privatised, the greater the need for vigilance and control in the public interest and this will lead to more regulations rather than less. By privatising and deregulating at the same time the Government is in danger of abdicating its social responsibilities." (22).

2.43 If establishments undertaking regulatory work, such as LGC, HSE and Agencies of MAFF and the Scottish Office Agriculture and Fisheries Department (SOAFD) involved in disease monitoring, were themselves to be privatised, a real danger emerges of private companies regulating their own activities and those of competitors. Alternatively, if a private company undertaking regulatory work ran into financial difficulties the prospects are either of a decline in the quality and coverage of the service provided or of an injection of public funding, in which case the Government would be providing finance without the degree of control which currently exists. Other areas of regulatory research, for example, relating to the environment, although vitally important to quality of life require a long term open-ended commitment and would be unlikely to find any market at all in the private sector. It is also important to retain statutory and regulatory functions "in-house" as the basis for EU standard setting. UK regulators need to be up to date in protecting

UK interests. They need the scientific expertise and advice so that they can be “informed regulatory policy makers” in touch with both the industry and latest scientific developments.

Independence and Integrity

2.44 Closely related is the issue of independence and integrity. As the KPMG study of TRL said:

“The main competitive weakness of the industry consortia in bidding for DOT business is the degree to which their research is perceived to be influenced by the requirements of their members. For example, although MIRA is clearly independent of the commercial interests of any particular company in its membership, it is open to question whether MIRA research results would generally be perceived as independent of the interests of the motor industry as a whole. This would disadvantage MIRA where regulatory and standards work is concerned.” (23).

2.45 Other examples include advice to farmers on pollution currently provided by MAFF and the work of the Intervention Board in the regulation of livestock products which could quite easily be turned to the advantage of particular interests. The LGC has been informed that if privatised it would lose work for HM Customs and Excise on analysis of drugs because of perceived threats to its independence.

2.46 In construction, clashes of interest already arise between building developers and those responsible for ensuring that buildings are constructed to comply with requirements for fire safety for their occupants, whether work-force or members of the public. The Fire Research Station, part of BRE, as an independent government body, is often asked to act as an informal arbiter which it does by drawing from a deep well of knowledge built up over the years. A privatised body, dependent on commissions from customers, will not keep its reputation for impartiality intact for long. Everyone, researcher, developer, regulator and the public will lose as a result.

2.47 Similarly, the BRE’s government customers know that the advice they are given is independent of any underlying commercial interest. Also that the views expressed in international standards committees, where researchers act as UK officials and represent the national interest, are free of commercial taint. Examples can be given where committee representatives from private companies have sought to influence the deliberations of committees to ensure that their product or services (eg testing) are not adversely affected by committee decisions—or indeed are even enhanced.

2.48 NPL provides another good example of these features. There it is the practical, physical standards, ie the hardware, with the people who made them and use them, which is the basis of the governments ability to:

- pronounce and legislate on technical matters;
- test compliance with legislation;
- assess suitability of equipment for national purposes;
- arbitrate on issues between British citizens;
- defend British interests in disputes with other countries.

At the national standards level of measurement science, the apparatus is of no value unless its builder, evaluator and user have complete control of it and of its history. The builder, evaluator and user, if not one and the same, must work closely together. These conditions are necessary to ensure the integrity of the standard of measurement provided by the apparatus. As in a court of law, someone has to vouch personally for the accuracy of a measurement made with their apparatus. This person, the metrologist, has to be a person of integrity, the laboratory in which the metrologist works has to have a reputation for independence and integrity in providing the conditions for the integrity of its standards.

2.49 Integrity matters in metrology as in other sciences,—eg calls for the experimenter to give the “minuses” as well as the “pluses” of his work. A business culture as recently experienced in NPL has already brought pressures counter to integrity, someone was asked by his manager to delete a “minus” on the grounds that it “does (the standard) down”. At a lower level such pressures can be countered by mechanisms such as NAMAS accreditation, but at national laboratory level it is essential to maintain a reputation for integrity and this is best demonstrated by independence of inappropriate pressures.

2.50 At the international level the apparatus built and maintained at the NPL provides a basis for the UK Government’s independence of action. For this NPL’s measurement-standard apparatus must be independent of that in other countries although meeting international agreements, and on inland UK issues it is clear that NPL must be impartial. It is also part of the international agreements, particularly the *Convention du Metre*, that countries will maintain enough independent measurement standards to assess the accuracy with which each can be realised in practice from its definition. This provides integrity to the international system of measurement, which underpins international trade, on which Britain relies.

2.51 A typical problem affecting national interests and requiring high-level metrological support is in defining the international boundary in the North Sea oil and gas fields. The boundary is liable to be uncertain to a few metres, but its practical delineation from the paper definition may decide who gets substantial revenue. Expert metrological help is needed to gain a better estimate. Differences in the origins of various countries surveying coordinate systems can lead to claim and counter claim. Typically this is resolved using

the American Global Positioning System (GPS) or similar satellite system which employs transportable versions of the primary standards of time and frequency, the caesium clock.

2.52 To obtain precise positioning, survey ships carry caesium clocks. At present in a dispute the government is supported by NPL's calibration and advice. NPL time and frequency staff advise regularly on national land and sea survey needs through attending the inter-departmental Land and Hydrographic Survey Committee (LHSC) which has worldwide concerns and combines both civil and military aspects. Further NPL can independently report on the functioning of the GPS since this system is continuously monitored for international time comparisons.

2.53 This advice to government would be lost on privatisation. Advice would not be on a regular "within government" basis but would have to be "bought in" by consultancy contract if a particular problem arose, and if the department with the problem knew where to go. NPL has advised MoD informally eg on where to seek competent consultants. That advice would be less reliable if NPL too were primarily consultants. Further, recent experience in NPL shows that arranging formal contracts with MoD for example can take many months longer than the time to the deadline to use the advice. In this context it is interesting to note that another participant in LHSC, Ordnance Survey, was considered for privatisation but the proposal was rejected.

2.54 The Efficiency Scrutiny team do appear to have taken some of these arguments on board, at least by implication. Although its brief analysis of the S&T activities in Annex H does not mention statutory and regulatory duties in its "front-line operational" definition they form an important aspect of the duties mentioned there. Similarly in quoting the HSE customer checklist in Annex P in paragraph 7.2 and recommendation 26 would seem to suggest again by implication that certain features of government responsibilities should be performed "in house". Thus one can assume, although again it is not explicit, that these tasks would be part of their definition of the "core" activities.

2.55 However, as in the case of the recommendation on BRE (see Section 3), any suggestion that such "core" activities should be split from the rest which can then be either subcontracted or privatised carries dangers. In particular it ignores the internal "synergies" between various areas of the PSREs' work. To take the example of NPL again there is synergy between the six "measurement" Divisions, including materials and IT standards and NAMAS as exemplified by:

- The main SI units of measurement are inter-related, and for work at the highest levels of accuracy on each, access is needed to the others.
- The common thread of standards and regulatory work associated with standards runs through all Divisions, and all derive benefit from and support NPL, including achieving economies of scale in the central overheads.
- NPL is big enough to provide the necessary continuity and stability in the standards work of each Division.
- The wide spread of technologies and of expertise permits cross-disciplinary work, eg the ad-hoc inter-divisional working group on high-temperature superconductors, which included the materials division, the inter-divisional fibre optics working group. Also work on basic standards, particularly high-stability frequency standards is about to be "brigaded" by NMSPU to reflect interest in three divisions and four groups stimulated under GRS funding.
- The purchase of expensive equipment, eg the NPL's hydrogen maser, is justified partly through its importance to fundamental measurement in the adjacent metrology divisions, aside from its importance to the NPL timescale and frequency work. The same is true of central computing support etc.
- NAMAS, while different from the other divisions, acts as a route to devolve NPL standards work to other accredited laboratories, benefits from NPL's reputation for impartiality and makes use of the experience of NPL staff for assessments and advice eg on reasonable levels of accuracy to certify in accredited labs. Likewise NPL benefits from NAMAS in identifying new industrial requirements for standards.
- Continuity is a form of synergy, it is beneficial to have all the standards in one place—as at NPL—and to keep them there. Under a tendered NMS regime there are pitfalls in assuming the keeping of standards could readily be moved from one contractor to another. All national users would need to be informed of the change, as to which standard was the national one at what time. This would require great care if the time standard itself were changed.

2.56 An example of synergy between Government work and work undertaken for the private sector can be cited from the work of the Fire Research Station, BRE. Work is currently being undertaken to assess the usefulness of equipping certain retail premises with automatic sprinkler systems for the information of the regulatory arm of DOE. Simultaneously several retailers are asking FRS to carry out work on assessing the hazards of their particular company's products when on display in areas open to the public, and if sprinkler systems can be used to reduce the hazard and allow more flexible use of buildings. Because of the work undertaken for DOE, the scientists involved can also undertake the private sector work; their independence of private influence and known confidentiality also encourages private sector clients to agree to their results providing additional information for DOE.

2.57 Compartmentalisation therefore threatens the quality and integrity of the service provided, the maintenance of a “critical mass” capable of carrying out the task and continuity of the database. The loss of such synergies also is likely to provide less value for money or efficiency. “Synergies” and overlaps within PSREs are as if not more vital than those across their boundaries on which the Scrutiny seems to concentrate. The proposals for privatisation of LGC and NPL could seriously prejudice these “core” government regulation activities (see Section 3).

Funding Trends

2.58 The Scrutiny Report is right to emphasise the dramatic decline in departmental funding as the backdrop and major motivator of the scrutiny. It sets out some of the details in Chapter 2 but in our view it understated the crisis (24). In Annex 1 we set out further details on the funding situation.

2.59 We do not find the funding either satisfactory or acceptable. It is not in the terms of reference of the scrutiny team to suggest improvements in public funding, simply to reduce expenditure to accommodate it. In our view the decline in departmental funding must be halted and reversed otherwise the PSREs, whether still in the public sector in privatised form, will not survive in the long term.

2.60 However, the political reality in terms of the context in which the scrutiny takes place and for the purposes of analysing the efficiency scrutiny and its consequences it is accepted as a political fact of life. We accept the need to achieve effectiveness, efficiency and good value for money but efficiency gains alone are unlikely to bridge the funding gap, and privatisation even if acceptable on other grounds is not proven to be any more efficient (25) or any cheaper for the taxpayer.

2.61 Moreover, many of the recommendations will not aid efficiency whether this is defined broadly as “the aim of achieving best value for money across the board from public expenditure in science and technology” (para 1) or on the narrower definition taken from the same first paragraph “to minimise the costs associated with public sector capabilities and ensure that funding is devoted not to overheads but to the delivery of good and effective science”.

2.62 Indeed leaving aside the question of merit the reorganisation and reviews suggested in the recommendations will themselves add to costs. There would be costs not only in terms of those carrying out the measures themselves, and costs associated with closure and redundancy, but costs in time spent away from scientific activity, costs in terms of lost reputation, break up of teams as in the case of WSL, and costs in terms of further deterioration in morale. The costs of making changes can be enormous and major changes should be very carefully analysed to ensure that the expected benefits outweigh the costs. The case of BBSRC is particularly salutary in this regard. Since 1980 institutes have been closed and rationalised with the number of institutes cut from 12 to 8, the number of sites cut from 22 to 13, staff cut from 6,300 to 3,700. But restructuring cost £81M in building projects and £46M in staff costs. Nor should the cost and time needed to reorganise science provision effectively be ignored, or the impact on morale. It took 12-14 months to reorganise and reassemble new science structures and to get programmes on stream again.

2.63 Many of the recommendations will entail costs and ensure that funding is in fact devoted to “overheads” and not “to the delivery of good and effective science”. Examples include recommendation 6 on “prior options” exercises for the research councils when there are several other mechanisms already in place, including the Director General of Research Councils, for looking at their structures across the board. Recommendation 10 suggests major reorganisation where the benefits are far from clear (see below in sections 4 & 5). Recommendation 12 suggests extra layers of bureaucracy which if their role is to be effectively carried out (26), will entail substantial extra overhead costs.

2.64 It also needs to be remembered that science for the most part is an activity which needs continuity and a long term perspective. security of funding and freedom from constant contractual and organisational upheaval are required to enable it to flourish. In the words of the Chief Scientific Adviser:

“In the implementation of the White Paper there must be no excessive unthinking zeal in the interpretation of accountability, evaluation, management, selectivity, exploitability etc, albeit that each is important. R&D in general and basic research, in particular, is a tender flower which requires tender care and nourishment, sometimes over a long period of time”. (27).

2.65 For example, many of the regional and global marine environmental studies require the sustained deployment of multi-disciplinary teams over long periods of time. The long term deterioration of the environment is not a problem that will be solved in a decade or two. Already continual re-organisations, emanating from the operation of the Natural Environment Research Council’s (NERC) own internal market (supporting peer-reviewed laboratory projects on a five-year rolling cycle), as well as changes in ownership and location of institutes and in the structure of NERC’s headquarters administrative structure, can have a damaging effect on staff morale and lead to the loss of skilled scientists and continuity in research. The continual reshuffling of management structures is not conducive to the long term studies essential if the quality of life is to be maintained and the UK is to exploit marine resources at sustainable levels.

3. PRIVATISATION

3.1 In dealing with the Scrutiny Report's proposals for privatisation we divide the issue into four parts:

- the criteria for privatisation
- the privatisations which were already determined before the review was published
- the early candidates for further privatisation
- the process for identifying future candidates

Privatisation Criteria

3.2 The Report sets out the criteria which should be used for deciding whether PSREs are candidates for early privatisation in Annex J. These are:

- (a) the extent to which the activities undertaken could be carried out in principle in the private sector.
- (b) the extent to which the resulting private sector organisation should be permitted control of its own destiny.
- (c) how far the organisation is in shape to thrive in the private sector.

They say in paragraph 3.4 that they have taken account of previous privatisations and previous reviews in compiling their criteria and that there has been full transparency with the DTI and Department of Transport (DOT) reviews. It would therefore seem appropriate to use these also to fill out what is meant by the criteria. (28). The TRL consultancy report is the only one which has been put fully into the public domain and this goes into more detail on criteria.

3.3 The Scrutiny also mentions some of the types of organisation considered "private". To the list of those normally considered as "private" eg trade sale to another company, are added "go-co" and more surprisingly—although "private" on a Treasury definition—universities. There are others, and variations of these, but for purposes of the analysis these will suffice.

3.4 In Table A we set out the criteria and the different broad types of "privatisation" and the degree to which, on the basis of current reviews and on state of knowledge of the various establishments, the different types of privatisation would meet the criteria. The criteria listed in Table A refer to areas which have passed the first hurdle (a) and might be considered "in principle" privatisable, and therefore relevant to categories (b) and (c).

3.5 As far as criterion (a) is concerned we have already covered in section 2 the functions which the PSREs perform which are integral to government science and essential for wealth creation and the quality of life, and which we consider should remain within the public sector if they are to be effectively performed and give good value for money to the taxpayer. Moreover, as the Scrutiny Report says even if they were analytically separable from other functions "it is not always an easy matter... to disentangle these from the other activities, which often either underpin or complement them". (Para 5).

3.6 Assuming that some elements could theoretically be privatised in principle we move on to look at the other criteria in (b) and (c). Some of the prime criteria defining "privatisation" in this context are that there should be "transfer of control and risk to the private sector". This means that public sector involvement in the management of the body should cease on privatisation—ie a "clean break" so that the government can exercise their customer choices without having to consider the consequences in terms of collapse or shrinkage of the contractor and possible consequential redundancies; and that there should be alternative sources of supply and cost effective delivery.

3.7 A major underlying concern, as the Report points out is that "PSREs overall rely on public funds for over 80 per cent of their funding" (para 2.11.) and the decline in Government funding described in Annex 1, means that PSREs may go into a "cycle of decline" unless they are free to raise business elsewhere. As the KPMG study of TRL says—

TABLE A: IMPACT OF PRIVATISATION

CRITERIA	TYPE OF PRIVATISATION			
	Trade Sale	'Go-Co'	Non Profit Co.	University
(b) Government objectives:				
- as "owner"				
1. "clean break"	■	●	●	●
2. maximise proceeds	●	○	○	○
3. protect employees.	●	●	●	●
- as "customer"				
4. impartial expert advice	○	●	■	■
5. stable source and quality of supply	○	●	●	●
6. alternative supply	●	■	●	■
7. cost effective delivery	?	?	?	?
(c) Ability to survive:				
beyond privatisation				
8. 'effective demand', revenue stream and potential for growth	●	●	●	●
9. access to new markets	■	●	●	●
10. commercial type operating methods.	■	●	●	●

Key ■ Yes ● Partly ○ No

"In our view, retention of TRL in the public sector would risk it being unable to respond adequately to changes in its market and run the considerable risk of TRL going into a cycle of cumulative decline. Privatisation, by removing some of the public sector constraints on its operations, enabling TRL to exploit fully its intellectual property and to develop a more commercial approach will make it better able to respond to its changing environment". (29).

3.8 Thus the criteria of a revenue stream and potential for growth are crucial. However, since the public funding is set to decline, why is there any more chance of survival if they are privatised? The private sector, for reasons already given show no propensity to support "public good" research, and if they do, this potentially conflicts with another criterion—impartiality. Indeed, the lesson of previous privatisations is that all have had to be launched with substantial government guarantees of support, thus nullifying the "clean break" criterion and in several cases, in order to survive at all they have had to transform their character, so that the criterion of a "stable source and quality of supply" has been infringed.

3.9 Thus the National Institute (NMI) was privatised in 1982 amid grave fears about its viability and shored-up with initial guarantees and memoranda of understanding. It is now called British Maritime Technology Ltd (BMT) with an annual budget of £20 million and a staff of 400 but has a quite different character and mission from the old NMI. The Hydraulics Research Station (HR) which was established to provide a national centre of excellence in civil engineering hydraulics was privatised in 1982 and is now run as a company limited by guarantee with profits ploughed back into a trust which holds all the assets. It currently has an annual budget of £12 million and 330 staff. Both organisations have managed to survive beyond the period of initial guarantees but, HR has contracted rather than expanded from its original size. HR have already made 35 staff redundant in 1993 and they are faced with further difficult times ahead as it faces increased competition from the Water Research Centre. The WRC privatised in 1989 when the water authorities were privatised, is cutting 20 per cent of its staff as the five year guarantee of contract work from the Water Utilities comes to an end and the water companies are cutting back on research. In so doing, the privatised water companies are acting the same way as the privatised electricity industry. The privatised BT and British Gas are also now performing and commissioning much less R&D than they were before privatisation, as the R&D Scoreboard indicates. Hence no one is doing the necessary strategic research.

3.10 Examples of the importance of maintaining a stable source of quality of supply include areas where long term data bases are important. Our NERC Institute of Hydrology members have pointed out that they have already lost several long term studies under funding pressures, only to find several years later that the missing data would have been extremely valuable. Similarly, the British Geological Survey (BGS) members point out that BGS currently successfully mixes public sector research and private sector contracts. The maintenance of the national geological data base and expertise is based on the core programme of data collection and interpretation. This expertise is used to advise Government, but is also utilised by the private sector. Much of the private sector work (both nationally and internationally) is based on the experience gained by being a national survey. Without the multi-disciplinary core programme, a valuable national asset would be lost. The hiving off of BGS to the private sector, or division into little pieces in university departments would cut off nearly all geoscientists from Government. BGS needs to strengthen its links with Government, not weaken them. BGS suffers from the absence of sound geological advice within departments. Moreover, BGS gains much of its work by being a multi-disciplinary geological organisation; to hive sections off to the private sector and/or university departments would destroy the potential for its many multi-disciplinary studies. As far as privatisation is concerned, Sweden provides a salutary lesson. They privatised their national geological survey only to find it went bankrupt and they had to bail it out at a cost of £20 million.

3.11 If one were to forget the type of services supplied by the PSRE and focus simply on maximising proceeds and making a "clean break" then a trade sale would appear to be a possible solution. But as the Levene Report says, (30) many GRES would be unable to generate sufficient profits to attract investors or fund future capital programmes. Also as the TRL report notes in relation to that laboratory, there is the possibility that a number of potential purchasers would be unacceptable because of vested interests which would threaten the impartiality of the research. There is also the problem encountered by the Atomic Weapons Establishment (AWE) that a private company would not receive the same co-operation or information sharing from other Government and public agencies because of less trust than between public organisations. (31). There may not be sufficient bidders for a total research establishment or the capital costs may be too high. In such cases the privatisation may entail fragmentation or "asset stripping" in order to make it profitable. As the TRL Study points out, fragmentation could lead to insufficient "critical mass" for viability.

3.12 Faced with these problems it is not surprising that the Scrutiny Report concludes that there are few early candidates for privatisation or that they seize on the "technical" solution of university ownership. They admit that the university option would not necessarily meet the efficiency or commercial objectives but it might make scientific sense.

"The underlying rationale here would have less to do with the introduction of commercial disciplines and opportunities and more to do with synergy. The main criterion in this case would be commonality

of interest and expertise, though funding stream considerations would also come into play". (Annex J para 8).

As we see below, however, the scientific synergies are not always obvious and the missions very different.

Privatisations in the pipeline

3.13 Although the Report is rightly sceptical about new privatisation initiatives at least for now, it fails to do anything to hinder the almost 50 per cent of the field which is already designated for privatisation in some form or another. AEA Technology (including the transferred part of WSL) is aiming for privatisation of its consultancy arm; the President of the Board of Trade has announced that NEL and LGC are to be privatised and NPL to be a Government owned/contractor operated company (go-co); and the Minister of Transport has decided that TRL will be privatised and by trade sale (the most damaging form of privatisation) despite the advice of his consultants. As a result the DTI and DoT will have little or no "in-house" research expertise at their disposal and the Government as a whole will be denuded of the vast majority of its research expertise in the physical sciences. Indeed if the proposal to privatisate BRE is carried through it will leave HSE as the only civil department having an in house capability in the physical sciences. This is a situation which should cause major concern.

3.14 In the case of AEA which is already a Trading Fund and operates at arm's length from government, the rush to privatisate the "commercial" arm of AEA Technology and separate it from a government owned decommissioning authority requires careful review from several angles. Firstly, it will remove from government a major pool of expertise on nuclear and other energy matters other than those relating to decommissioning.

3.15 Second, there is a risk of early business failure for the privatised part of AEA, which would cause extra cost and difficulty for the Government. This is because increasing profit projections for Commercial Division rely on exploitation of monopoly situations that currently exist, for example in the areas of decommissioning and waste management. Without the guarantee of long term Government contracts after flotation, the future of the Division would be at risk. In addition many of the potentially commercial activities assigned to Commercial Division risk failure since they are based on synergies with part of Government Division that would no longer be available to them. They would be unable on their own to demonstrate profitability at a sufficient level in the early stages and, under private sector criteria, would be closed down. Even if it does survive the privatised commercial division is likely to have to change its character to do so—doing consultancy rather than R&D and potentially moving out of the nuclear field all together.

3.16 In the case of TRL and the DTI laboratories reviewed, they perform important "core" functions which should stay within Government. In the case of the DTI laboratories, especially LGC and NPL, they perform scientific services which are well within the core statutory and regulatory functions and both they and NEL perform much "public good" research that will either not find support in the private sector or should not be done there. However, it is clear that the President of the Board of Trade sees little role for them in DTI since he sees DTI's primary mission as being to raise "awareness" of innovation in industry. The laboratories would provide valuable support in depth for his "business links" but they do not necessarily need to reside in DTI in order to provide that. DTI staff should also ideally be providing the scientifically literate input into senior policy making in DTI but a President who can decide not to replace his Chief Scientific Adviser clearly does not wholly appreciate that role either.

3.17 Whilst we welcome the statement in the Government's response to the Committee's report on Innovation that:—

"The DTI's laboratories are an important national resource. Each of them plays a significant role in ensuring the competitiveness of British industry and in meeting the needs of Government Departments. They have a unique asset in the expertise of their staff, which is respected internationally."

and the promise that:

"The proposed changes in the status of the laboratories will not reduce the need for consultation on programmes of work. The Department is, therefore, reviewing the way in which it manages such programmes to ensure that the arrangements are appropriate for future circumstances, and that they will continue to allow the laboratories to contribute to the health of industry on broad front, as well as to meet the Government's needs." (32).

We nevertheless feel that time is running out. The National Engineering Laboratory is already admitted by its director to be below the "critical mass" for viability.

3.18 We would therefore recommend that before any more damage is done to the science and engineering base in DTI they should be transferred to the OST so that they can provide a central resource of expertise and provide scientifically qualified staff to fill senior positions in OST and the DTI from there; and that the decisions to privatisate should be revoked forthwith.

3.19 In the case of TRL, the consultants made much of the fact that TRL, needed to be privatised because of the potential "spiral of decline" resulting from a squeeze on total government funds available for transport research and the growing use of competitive tendering. If it was to be privatised the KPMG study recommended a non profit making company limited by guarantee because it carried less chance of fragmentation and was more likely to retain the confidence of others in its independence and integrity.

However, it would need government guarantees of contracts or support for some time thus negating the principle of "clean break". The continued provision of expert advice and continuity as a centre of excellence would depend on TRL's staff remaining with the company and this in turn depended on seeking a form of ownership which could retain their confidence and a non-profit distributing company, perhaps with some management buy-out elements, would be more likely to do so than a trade sale.

3.20 The KPMG study points out that TRL is very closely interwoven with the Department of Transport. For sixty years TRL has been the main research arm of the Department of Transport. The Agency Framework Document puts it this way in paragraph 2.1:

"It is essential for the safe and efficient operation of the UK transport system that there is a close link between scientific research and transport policy. TRL currently plays a crucial role in achieving this as the primary source of impartial and authoritative research and scientific advice to the Department of Transport".

This means in our view that TRL would not pass hurdle (a) above established by the Scrutiny Team and should not be privatised on that account.

3.21 One of the crucial roles which PSREs, particularly GREs perform is as "intelligent customer"; a role which Levene and Stewart have described thus:

"The informed customer should identify whether research needs to be carried out, have a knowledge of the organisations capable of carrying out the work, assess the merits of alternative contractors and evaluate the end result". (33).

They note that the range of expertise required is unlikely to be found in one person and that the function needs to be properly resourced. Establishing such a resource is more necessary where privatisation and contracting-out has taken place, and more expertise is required which could previously have been obtained via the in-house research establishment. These costs will be substantial if the job is to be done properly. For example the KPMG Report notes how heavily dependent DOT is on TRL for "intelligent customer" services.

3.22 In our view TRL meets very few of the other criteria under (b) and (c) either. We have already noted that a "clean break" would not be possible and there is no real potential for growth outside the public sector unless it changes its character. (34). The government would not easily find alternative sources for all areas of expertise—some would need to be found overseas. KPMG notes that "using overseas laboratories would entail logistical difficulties" (35), and, we would add, would not necessarily be considered by the taxpayer as providing overall good value for money, nor would it help the UK science base.

3.23 In the case of TRL too therefore we believe there is a strong case for revoking the decision to privatise, and particularly the decision to privatise by trade sale. As the House of Commons Transport Select Committee said after its investigation:

"We cannot recommend the privatisation of TRL to the House until we have received much more convincing evidence from the Department that the laboratory's independence and expertise will not thereby be sacrificed." (36).

3.24 We hope that the new Minister will take the opportunity to review the position. It would be preferable for TRL to stay close to the Department but if the new Minister continues the same policy as his predecessor then we would recommend that as in the case of the DTI laboratories the OST should take over responsibility for this laboratory too and revoke the privatisation decision.

Early Candidates

3.25 Although the Efficiency Study recommends that ADAS should now be privatised, there is little supporting evidence in the report to support this recommendation. Whilst ADAS does offer a full range of commercial services it also retains a large dependency (approximately 60 per cent) on Government funded "public good" research and Statutory Order advisory services, including environmental, pollution and animal welfare services. The question of ADAS privatisation is being addressed in a separate review of ownership options that is reporting direct to the Agriculture Minister. IPMS believes that it is not appropriate for the complex issues associated with ADAS privatisation to be dealt with in a superficial manner through the Efficiency Scrutiny and we therefore make no further comments on this specific case.

3.26 IPMS wholly opposes the suggestion in recommendation 2 that the "frontline functions" in DOE could be separated from the rest, and the latter brigaded with other privatisation candidates—TRL and/or NEL. We have already explained in paragraphs 2.4 to 2.19 why we think it is important to sustain close relationship between GREs and their parent departments. Sir Peter Levene describes the relationship between GREs and departments thus:

"Departments see value in such in-house contractors who can develop specialised skills and facilities dedicated to the demands of their customer-owner, can be encouraged to give particular S&T programmes continuity of resources and direction, and can be called on at short notice to give priority to unexpected issues." (37).

But whereas Martin Holdgate (see paragraph 2.11 above) regarded this relationship as an advantage, Sir Peter Levene disapproves because he wishes to see full institutional separation of customer and contractor.

3.27 Since the Scrutiny Report rejects the argument for the need for full institutional separation elsewhere in the report, and gives no other supporting arguments for splitting the functions in this way, it is mystifying why they should make recommendation 2.

3.28 A better estimate of the "core" work at BRE which would have to be undertaken by the department is 56 per cent rather than the 36 per cent quoted by the Scrutiny Team—paragraph 3.6. As we state in paragraph 2.53, the activities cannot be simply split into two areas. Apart from the internal "synergies" between the two activities, in many cases it is the same staff who are undertaking both the "core" work and the "non-core" work for other customers, including other Government Departments. For example, the case from Fire Research quoted above in connection with 2.54, it is the very same team of people who do both the work for DoE and for the private sector, to benefit of both.

3.29 Moreover, "non-core" often precedes "core" work, or vice versa. In some subject areas/capabilities support has moved from "core" to "non-core" several times during the course of the programme. For example in BRE:—

- The "core" work which resulted in the proposals for energy conserving controls for artificial lighting in buildings and which have been adopted as part of the Building Regulations, were preceded by "non-core" work on controls supported by the Department of Energy.
- Similarly, work on heating controls undertaken for various private contractors provided the background to the work in support of the Building Regulations for heating controls in buildings.
- Work by BRE for the Cladding industry on potential conflicts between the durability and fire performance requirements of cladding systems enabled BRE to respond quickly to a Ministerial request for definitive guidance on overcladding system for blocks of flats as a result of a fire at Knowsley.
- In the reverse direction, the BREAM schemes for the environmental assessment of buildings which are fully supported financially by industry was only possible because of the "core" work carried out for Government in the past. BREAM is unique and is seen by Government, BRE and the industry as a major influence in making the Construction industry aware of environmental issues.

In summary, BRE's programme is a dynamic blend of "core" and "non-core" research which would suffer irretrievable damage if recommendation 2 is carried through by the DoE.

Identification of Future Candidates for Privatisation

3.30 The Report suggests in recommendation 5 that in reviewing the case for privatisation in the "Prior Options" process they should identify "frontline" activities and their essential supports. We would agree with the Report that such activities should stay in Government, or be reproduced there if privatisation, despite our objections, does take place. There is a particular need, as Levene and others have pointed out, to strengthen the "informed customer" role. There is also a case in DoE and DoT to strengthen the general S&T expertise in HQ so that they are not so totally dependent on their PSREs. But as we explained in Section 2, there is much greater value for money, public good and support for science in policy making to be obtained from keeping the full range of functions in the public service.

3.31 The Report also suggests that departments should analyse the propensity for separating privatisable elements from the "frontline" and "immediate support". We have already noted that the Team itself believes this is difficult to do (see para 3.5. above). Our members in TRL agree. As they said in evidence to the KPMG consultants:

"The proposal to privatise TRL is based on the premise that the DoT can obtain research services from any of a large number of competing organisations, with consequent benefits in reduced costs. It is assumed that impartial advice can be obtained from whatever organisation carries out the research work, so that there is no need to retain in-house a body of researchers."

We dispute the above assumption. There is a crucial difference between conducting a research project and assessing the significance of the results.

There are many organisations capable of conducting research projects: consultants, university departments, institutes, market research companies etc can carry out work efficiently to a carefully prepared brief. Their reports give an accurate account of what has been done and what results have been obtained. But the organisations would not expect to advise on the basis of the original brief, the significance of the results to policy or the relationship with results from other studies. Many of these areas might have an impact on the commercial interests of the organisation concerned: it would not feel obliged to supply information or advice which might damage those interests.

TRL's current status within the Civil Service enables it to supply such advice, free from commercial or other pressures. Privatisation would introduce such pressures, which could affect TRL's reputation for impartiality".

3.32 As far as recommendation 6 is concerned, as we have said in paras 4.18. and 4.14. while we accept the need for reviews of efficiency and effectiveness and to review the scope for rationalisation and privatisation, constant and fragmented reviews by a variety of different bodies with their own agendas, rarely scientific in either purpose or method, is highly damaging to the pursuit of a long-term exercise like research. The current

five year cycle used for "Next Steps" reviews seems far too short a cycle particularly to review such major structural issues as privatisation and rationalisation. Moreover, as far as the third "prior option" is concerned, since the report was written the OPSS has in the latest White Paper on the Civil Service, (38) further refined the criteria for contracting out, bringing it closer to recommendation 30 and lessening the justification for review of that aspect.

3.33 We welcome recommendation 7 but totally oppose recommendation 8. This seems to us a recipe for "cherry picking" the profitable bits and for fragmentation. We are particularly concerned about paras 3.6(c) and 3.8, which seem to be an open invitation for the crudest form of "trade sale" approach. It also seems to contradict the Scrutiny's statements elsewhere about the importance of a clear strategic view as well as sacrificing internal synergies and retention of "critical mass" of the PSREs. For example if subject specific areas were removed it would render the PSRE less able to conduct multi-disciplinary research.

3.34 As far as recommendation 9 is concerned we accept the need for a long term strategy and organisational and funding arrangements to suit. But we do not accept that the identification of privatisable parts can be made for all time, since government needs and priorities may change (see paragraph 2.21 above). However, we do endorse this recommendation insofar as it attempts to deal with the situation where long term candidates for privatisation such as NEL should not be allowed to die of neglect (39). On the other hand, we totally disagree with paragraph 7.16, which says that "PSREs which are to remain public sector organisations should have the emphasis placed on economy and limitation of non-government activities, while PSREs designated as potential privatisation candidates would be encouraged to expand their markets and become as fully commercial as possible." In our view the latter conditions should be provided for all PSREs (see section 5 below).

3.35 In conclusion on the question of privatisation the IPMS concurs with the CBI and the Royal Society (40) that privatisation offers neither a feasible or desirable option even if conceived in the narrow terms of reference set by the scrutiny team, and certainly not if wider considerations of the public good and good value for money for the tax payer and the intangible benefits of PSREs to Government in general are taken into account. A possible exception to this, however, might be the technical "privatisation" option of a link with universities, to which we now turn.

Links with universities

3.36 Linkages between research undertaken in PSREs and in universities are nothing new. There is an overlap of basic, strategic and applied or near market elements and both include finance from public and private sources. Some areas of research are contracted to both Government and university sectors. For example, the Horticulture Development Council allocates funding to HRI and university research teams. Where interest and expertise is spread across both sectors, it makes sense to explore the scope for establishing closer links in an effort to maximise quality and effectiveness whilst reducing overheads. In Scotland the Scottish Office supports early and close collaboration between its sponsored bodies and local universities. Three research establishments in Aberdeen supported by the Scottish Office serve as the focal point for three research centres involving a consortium of two universities, five research institutes and the Scottish Agricultural College. This networking is seen as a vital feature of Departmental policy and an important means of enhancing the nucleus of key British scientists.

3.37 Among RCIs POL already has strong links with Universities through its research projects, particularly Aston, Bangor, Edinburgh, Lancaster, Newcastle, Nottingham and Sheffield, and is formally affiliated to Liverpool. These links feed on the complementary nature of research in the different organisations. Some POL staff have honorary positions in universities. University lectures are given on BSc and MSc courses and PhD students are supervised in collaboration with various universities. In the GRES, BRE has professors on its staff and have a special section to develop links. DFS in MAFF has close links with the university of East Anglia, Cambridge University and others. The annexes to the Scrutiny show a wide range of such links for most PSREs.

3.38 Collaboration between PSREs and universities offers many advantages. For PSREs it provides additional research facilities. For example, PSREs can generate many "what if" questions which may not justify major capital expenditure on equipment and facilities. Universities may have these facilities, and collaborative studies may solve the scientific question without large-scale expenditure by the PSRE. However, the control of collaborative studies has to be carefully planned and agreed. Control should be retained by scientists within the PSRE generating the problem to ensure that the direction of research is maintained. Poor control of Government research contracts to universities can lead to ineffective use of the funding and a failure to address the real problem to be solved whilst carrying out more "interesting" research.

3.39 Links with universities are also important for the cross fertilisation of ideas. It is essential for all scientists to maintain contact with colleagues. Scientists in PSREs must be aware of developments within university research departments, and academics should have an appreciation of science in national and

international policies. But this requires links with many universities and may be damaged by an exclusive relationship with one. We therefore welcome recommendation 4.

Transfer to Universities

3.40 However, we have more serious reservations about the transfer of ownership to universities. Although it is tempting to see it as a sanctuary from the pressures of the Government squeeze on funding for PSREs, and a means of achieving freedom from the rigid Treasury attitude to the PSBR, we would urge very careful and detailed examination of the option before rushing down that route.

3.41 Firstly as we pointed out in paragraphs 2.4 and 2.5, the core mission of universities is very different from GRES and, although less so, from Research Councils. GRES would lose the advantage of close links with the department and Government and vice versa, as spelled out in Section 2.

3.42 The basic concepts of scientific research and its application have widely different interpretations within universities and PSREs. The former are dedicated to carrying out research as an end in itself, whilst PSREs are concerned with the application of research to solve specific problems which contribute to the policies and responsibilities of their parent ministry. Integral with these differences are other differences in both funding and staff structures. Universities depend upon innovation to attract funding and academic staff, often in both cases of a short-term nature. Many PSREs carry out research to satisfy statutory duties which require long-term funding and experienced permanent staff who require a grading and career structure within which they can develop scientific expertise and be rewarded for any increase in responsibilities, particularly in the provision of advice to parent departments which is used in the formulation of national and international policies.

3.43 Given that the university's primary mission is teaching and research associated with it, project management may be less professional, continuous, and is more geared to the academic interests of those involved than to the "customer". Moreover, the bulk of research is undertaken by students or those on short term contracts, again often with their own individual agendas and offering little continuity. As KPMG point out this often makes it difficult to commission further work which builds on previous work undertaken and may mean that questions arising in the months after the conclusion of a particular project cannot be answered because key staff have moved on. (41). As our members in POL point out:—

Universities are unlikely to support long-term monitoring, which underpins studies of the environment (POL houses the Permanent Service for Mean Sea Level (PSMSL) and the British Oceanographic Data Centre, and is responsible for operating the UK national tide gauge network. The PSMSL data bank has been used by all international scientists studying past and future sea level change). Such monitoring work is the "bread and butter" science of many PSREs and has to be carried out with a high level of scientific integrity and control which is best provided by a well structured PSRE.

3.44 Moreover, quality control of research facilities and procedures is becoming more rigorous. NAMAS accreditation of laboratories is demanding higher standards, which universities may be unable to meet. There may be mutual benefits in sharing spare land and good laboratory facilities between PSREs and universities, but they can share costs and co-locate to realise some of those benefits without having to merge or transfer ownership. For example, NERC is already co-operating with the University of Southampton where the Southampton Oceanography Centre will be established at a cost of £49 million.

3.45 Research Councils already have experience in managing large scale and multi-site projects on a long-term basis. For example, the British Geological Survey is already the size of a large university. They are already able to share resources both within and between organisations. Moreover, they are organised on a pluralistic basis with a variety of forms of ownership of institutes and most PSREs are inter-disciplinary in approach. These features would not match well with university structures.

3.46 More serious, however, is the fact that university ownership would not solve the major funding problem. They would still be largely dependent on government funding under the "dual funding" and departmental funding mechanisms. The only advantage would be freedom from PSBR rules, to which we believe there are alternative answers (see Section 5 below.) Moreover, there would be serious disadvantages such as the loss of the "synergies" within government described in Section 2, and for both departments and research councils the loss of strategic overall control and mission the importance of which the scrutiny team so rightly stress elsewhere in their report.

3.47 Turning to the specific case of NRI and Greenwich University, the idea began as a useful convergence between the Director's desire to pre-empt the efficiency scrutiny with the worthy objective of trying to keep NRI together in the face of future cuts in funding from the Overseas Development Administration (ODA), and the fledgling Greenwich University's desire to achieve the basis for research respectability, and find premises to expand in close geographical proximity.

3.48 The plans have now expanded to include a consortium based on Greenwich, Edinburgh and Wye College. Although this would give a broader and more relevant base than Greenwich alone, we understand that Wye and Edinburgh are not putting resources into the project, although they hope to benefit from association with the NRI reputation. It is also of concern that the new consortium backed contract research company which would emerge from these proposals will have to consider "how far the business should concern itself with developed as opposed to NRIs traditional developing country markets". If the NRI were

to shift its emphasis in that way it would be a major change of mission and the basis on which the majority of the scientific staff joined the institution and view the public purpose of their work, not to speak of the loss this might be of a valuable resource for the developing world is a major cause for concern. It should also be noted that ownership by the consortium would leave the ODA itself with little expert backup to policy making. As can be seen from page 12, none of the senior officials in ODA have a scientific background.

3.49 As our NRI members said in their submission to the Efficiency Scrutiny:

"NRI's valuable knowledge of Third World countries must not be lost. Once this knowledge base is dissipated it is unlikely ever to be regenerated as a central focus in the future.

NRI name and reputation: It is important to maintain NRI as an identifiable and viable entity, for the benefit of the end-users of the outputs of the work—the customers in developing countries. Despite changes over the years NRI is still held in high esteem, as is the British Government's Overseas Aid Programme. Further changes may have an adverse effect on this and a loss of respect overseas for Britain's commitment to Development Aid."

3.50 In our view the objectives of maximising external income in the face of ODA cuts in funding and fully utilising the Chatham site could be achieved without splitting NRI and without the need for a separate company. A single marketing division/research directorate within NRI could interface with ODA and outside customers and provide services to the University of Greenwich, the University of Edinburgh, Wye College and other possible interested organisations.

4. POTENTIAL FOR RATIONALISATION OF CAPABILITIES AND FACILITIES

4.1 The terms of reference say that where early privatisation is not feasible or desirable the potential for rationalisation should be identified and recommendations for implementing them be made.

The case for rationalisation

4.2 The Report makes it clear that its case for rationalisation rests primarily on what they call "overcapacity" (4.3) ie overcapacity in relation to the funding available. As we have already pointed out we don't accept this premise since the Treasury has created the funding crisis and if Treasury rules were changed that hypothetical spare capacity could be more effectively utilised. The Scrutiny Team found very little duplication, not surprising given the wholesale rationalisation which had already taken place during the 1980's. However, they did find some overlaps, although even these may not be genuine overlaps when the context and purpose are taken into account (42). Overlap can mean healthy competition and can provide choice to the customer. Indeed, it is basic to the processes of scientific evaluation that experiments should be repeatable in different contexts.

4.3 The Scrutiny Team provide no convincing evidence that plural research sites and facilities are inherently less economic than highly centralised ones. In the Marine area, for example, a geographic spread of marine laboratories has been considered to be necessary for studying marine environments characteristic of different areas because moving small research vessels and providing temporary facilities at remote sites is difficult and expensive. Even in the terrestrial field—eg terrestrial ecology and geological surveys, it has been found cost effective to set up local laboratories rather than having a central one. In terms of organisation it would appear to be doubtful that combining remote laboratories under one central management would be more cost effective than the present system in which co-ordination of research is controlled by inter-departmental co-ordinating committees as well as the InterAgency Committee for Marine Science and Technology. This committee could oversee any rationalisation needed in the Marine sector. The Marine Science Community Programmes—eg North Sea Project and BOFS, involving both PSREs and Universities are considered to have been particularly successful and this kind of strategic research is now becoming increasingly common.

4.4 Although these functions of competition and replication can often be supplied outside the UK, and in many situations competition within the UK may be wasteful, and in others the scale of experiment or experimentation required makes replication impossible, at the very least we need to look beneath the surface of apparent "overlap" before rationalising. There is no perfectly rational structure for laboratories which will be right for all time, least of all in a dynamic area of change such as science. Also as we have already mentioned (para 2.60 above) the heavy costs of rationalisation also have to be borne in mind.

4.5 There is of course the vital issue of viability. There is a certain "critical mass" of staff and projects required to enable a research establishment to function, to deploy its resources flexibly to meet emergency situations and to withstand the vagaries of the market place. Many "next steps" agencies are too small to be viable and competitive. Many are saddled with personnel management and other administrative overheads deriving from government insistence on a degree of devolution and autonomy which they cannot reasonably support. The grouping of agencies together, their absorption back into the department, or loose consortia for pay, pension and other purposes are some of the solutions which might be appropriate in particular cases. Some such solutions are recommended by the Report and we discussed in detail their implications for efficiency in section 6.

4.6 We argue that departments and research councils provide the best ownership and strategic framework for PSREs to operate in and that GREs, research councils and universities have distinctive core missions. But

for the sake of efficiency and adaptability to changing scientific, political, market and organisational circumstances it is essential that PSREs should be ready to adapt and should not stick rigidly to their own boundaries. The case of WSL is a salutary warning. There synergies in terms of scientific content and customer market focus could well have pointed to a merger with BRE, but the ownership and control rested with DTI who for their own reasons did a quick, and much less appropriate deal, within their own bailiwick.

4.7 The major oversight role should be played by the OST, aided by the new SET White Paper mechanisms of Technology Foresight, and the Forward Look, see Section 8 below. These combined with the very real competitive pressures for survival should be enough to ensure a wider view. Any such cross boundary measures will need to operate with consent and with thorough investigation of the suitability of the proposals from all angles. We would also support the suggestion in recommendation 19 that positive incentives should be provided for PSRE chief executives and staff.

5. OWNERSHIP AND ORGANISATION STRUCTURES:

5.1 There were, however, other motives for suggesting reorganisation other than overlap as the Report says in para 5.6. These included:

- to separate “customers” and “contractors”
- to increase flexibility of response and the ability to look across departmental and RC boundaries for synergies.
- to increase the scope for privatisation.

5.2 Separating the “customer” and “contractor” was one of the major underlying objectives in setting up the scrutiny, although as the Report says the main target was the GREs where Levene and Stewart felt that departments were dragging their feet. Indeed they said that the Research Councils “appear to have managed (the conflict between customer and supplier roles) reasonably well in the past” and that “ownership of Institutes (is) a by product of the Councils’ concern to ensure that high priority work is carried out”. (Para 5.8). It is therefore particularly ironic that in their proposals for reorganisation the scrutiny team have felt obliged to cross over into the BBSRC and NERC. There is a great danger in this aspect as in other parts of the report that solutions designed for GREs are carried over into the research council context without taking account of their particular needs.

5.3 We do however, welcome the rejection of the Central Science Agency concept and welcome the assertion of the need for a strategic approach (para 5.13). This, taken together, with the acknowledgement that links between departments and GREs are very important adds weight to our view that the strategic thrust and any rationalisations which do need to be made should be carried out by the Research Councils themselves and by those departments such as MAFF, the DOE and the Scottish Office who have a very clear idea of the mission they wish their GREs and RCIs to perform.

5.4 While there is a case for encouraging inter departmental synergies, collaboration and rationalisation the Report suggests other mechanisms for achieving those objectives eg recommendations 18 and 20, and it does not require a deliberate cross cutting of ownership such as is suggested in recommendations 10 to do so. As far as the preparation for privatisation is concerned for reasons given in Section 2, we do not accept that this is a legitimate target and therefore it does not justify the reorganisation recommendation. The major objective of change should be efficiency and effectiveness not privatisation.

5.5 Recommendation 11 would be redundant since we do not see the need for recommendation 10.

5.6 While we do not accept that there is a need for organisational change along the lines set out in recommendation 10 for the reasons given above, we have had some comments from members about the problems associated with the models suggested and these are provided for information contained in Annex 4.

5.7 We see no reason why the PSREs should not continue with the current diversity of ownership models, particularly as developed within the Research Council area. Nor do we see why the majority of GREs which are “next steps” agencies should not continue with that form of ownership. Reviews which have been allowed to consider the status quo as an option, (43) have confirmed that the option is a sound one. The latest review to do so is the Forensic Science Service where the Home Secretary announced that “The Government has decided that the Service should remain as an executive agency for the present, and move to trading fund status when appropriate. This will allow the agency to continue to build on the progress it has made so far”.

5.8 Although, as indicated above, trading fund status is not appropriate for all research needs, it can satisfy the desire expressed by some of the Government’s advisers for an arms length relationship which is more directly comparable with private sector arrangements whilst maintaining accountability and the benefits of the agency’s activities within the public domain. We would not deny that in some cases a more commercial approach may help to give greater emphasis to consumer satisfaction and value for money. The Defence Research Agency which now has a trading fund is making great strides towards increased customer satisfaction and efficiency. Similarly the KPMG Study says of TRL:

“DoT customers without exception depicted TRL’s strengths as outweighing its weaknesses. Indeed, it is clear that the Department is, in general, very satisfied with the quality of TRL research and its responsiveness to customer needs, based on a good understanding of the Department’s requirements for research”.

5.9 There are improvements to be made still in increasing competitiveness, attracting money from non-government sources (the potential for doing this being very limited in some cases) and improving efficiency and we suggested elsewhere ways in which this might be done. However, there is no intrinsic impediment to agencies being capable of meeting the needs of government, the public and other customers. The main impediments to increasing competitiveness, efficiency and effectiveness are not the departments who "own" the agencies, but the Treasury and others who are placing unrealistic targets on agencies and limitations on their ability to meet them. We deal with changes the Treasury and OST might make in later sections.

6. RATIONALISATION MECHANISMS

6.1 In Chapter 6 the scrutiny team propose an alternative rationalisation mechanism if reorganisations along the lines suggested in recommendation 10 are not acceptable. They also suggest certain supplementary mechanisms to aid the coherence of the "demand" side and improve the efficiency of the "supply" side.

Directors of Rationalisation

6.2 The Report poses as an alternative to structural change the appointment of two directors of rationalisation to cover (a) marine and non-marine environment and (b) food, agriculture, biotechnology and biological sciences (recommendations 12 and 38). While such an alternative would be preferable to the structural upheaval recommended in 10 and 11 as we have noted in paragraph 2.61 above it does, if the job is to be done properly, require costly extra layers of bureaucracy. Moreover, it is difficult to see in the Research Council area why supplements to the Chief Executives and the DGRC are required. Similarly departments could use their own agency mechanisms such as the "Fraser figure" (see para 5.4. of the Scrutiny Report). The question of overlapping and rationalisation across boundaries has been covered above.

Supplementary mechanisms

6.3 Of the supplementary rationalisation mechanisms recommended by the scrutiny we welcome the recognition in 13 and its associated paragraphs that open competition, although theoretically supposed to increase efficiency, has its limitations; its stress on the need for a strategic co-ordinated customer view (see also para. 5.3 above) to avoid wasteful competition; and its support for collaboration. We would add that in many areas there may be no realistic possibility of creating intra UK competition. Indeed, an insistence on competitive tendering may fragment research effort, impede co-operation on information sharing and undermine the capacity of UK research to compete internationally. Research capacity once contracted-out or a bid lost to competitors is often lost forever. If the new contractor fails to deliver there may be no alternative "in-house" experts to pick up the pieces, or to bid for the contract next time round. Departments are right to proceed with caution in opening up research areas to contract and its impact on both the department and more widely needs to be carefully monitored.

6.4 The NERC British Geological Survey provides an interesting case in point. It conducts long term strategic geoscience surveying and systematic monitoring linked with the establishment and maintenance of publicly accessible geoscience data bases. The private sector is not suitably constructed to undertake long-term systematic nationwide surveying and monitoring to uniform standards nor to maintain data bases within the public domain on a long term basis. Although BGS is not currently being put forward for privatisation and the Butler Committee has concluded that the core programme should remain in the public sector, there are still dangers. Core government funding is declining and piecemeal market testing by DTI and DoE has ensured that work is contracted out to separate organisations, thus endangering the national data base.

6.5 We also welcome recommendations 17, 18 and 20, many of which are already happening, as ways of enhancing collaboration. In our view the necessary groupings for administrative economies of scale and viability such as common pension schemes, pay and personnel systems, can be achieved through consortia, as is already happening in Scotland through the creation of the Committee of Heads of Agriculture and Biological organisations (CHABOS). Consortia could also be devised for scientific purposes without necessarily needing to transfer ownership. Such looser linkages would enable the objectives of efficient flexible organisations responding to a changing environment and collaborating or competing as appropriate to be achieved without the upheaval of large scale re-organisation and the creation of extra bureaucratic layers between individual institutes and agencies and the "parent" department or research council.

6.6 We do not consider it necessary for Departments and OST to be informed in the amount of detail about the activities of the PSREs as suggested in recommendation 14. As the Scrutiny Team itself says elsewhere, agencies should have a higher degree of autonomy in exercising their responsibilities. It is unnecessary and wasteful for both departments and the OST to be "second guessing" every detail of management. This does not mean that PSREs should not do their own competition assessments. Although departments and particularly the OST may need to monitor broad developments on the degree of competition and collaboration, it should be sufficient for this to be done in the "Forward Look". Any statistics of that kind would need to be collected on a common format. But within such common formats the details should be left to PSREs.

6.7 As far as recommendation 15 on the "windows of opportunity" when new capital works are considered is concerned, we accept the need for care in assessing the need for new investment and the possibility of sharing

costs but we have several reservations about the proposal. First, the decision must be based primarily on scientific considerations and the needs of the work and not upon financial considerations alone. An awful warning in this particular context is the decision of the President of the Board of Trade to close WSL and to merge it with another part of his empire—AEA Technology, although without prior consultation with them. The decision was made in haste on the basis that he could save £25 million from selling the site on which the new WSL laboratory was due to be built, having sold the old WSL site to Glaxo. In this particular case not only did the full £25 million in savings not materialise but a premier environment research laboratory was fragmented and much valuable work has been lost. Only half the staff and functions moved to AEA, and they have been dispersed within AEA rather than merged with one particular unit—the NETC as promised. A few staff have been moved to other posts in DTI and the rest have gone on either voluntary or compulsory redundancy.

6.8 As far as the specific figure of £3 million is concerned this is far too low and inflexible and takes no account of life cycle costs/savings or of the fact that capital and other costs vary enormously between different PSREs. As the Report itself says “there is no consistent relationship between costs and numbers of staff, much depends on facilities, size of site, the degree of subcontracting etc.” (paragraph 2.9).

6.9 We agree that if there is to be a “Prior Options” process then it would make sense to include rationalisation in it (recommendation 16). However, as we note above the number and frequency of different reviews needs to be reduced and the reviews themselves should be rationalised so that far less administrative burden and disruption is placed on PSREs. Reviewing for efficiency and effectiveness should become a dimension of their normal management procedures and not a constant external intrusion.

7. COMMERCIALISATION OF THE CUSTOMER-CONTRACTOR RELATIONSHIP.

7.1 As the Report recognises, the operation of the Open Market is not always the best way to secure efficiency nor value for money and it makes several proposals designed to modify the “Rothschild” customer-contractor principle. As the CCSU pointed out in its submission to the Efficiency scrutiny, Rothschild did not envisage the customer-contractor principle extending beyond the “applied” area. Levene and Stewart agree and recognise that there is no hard and fast division between different types of research. However, this more sophisticated approach is not always applied when setting targets or assessing progress in opening up areas to competition. It seems to be assumed that all areas of research which are of interest to, or produced within departments, are appropriate to a “contract” relationship.

7.2 We therefore accept the spirit of recommendation 26. It is sensible to draw up clear criteria for deciding which types of work should be subject to the customer/contractor principle and which should not, and which can be placed outside the particular PSRE, Department, Research Council or public sector as a whole, and which must be retained “in-house”. Any such guidelines, however, would need to take into account the different types and mixes of PSREs work but there would need to be general principles applied to all to secure a “level playing field”. It is important that both those who formulate, and those who apply the rules are fully qualified to do so scientifically.

7.3 In developing such criteria both the OST and departments should take account of the fact much long term research is not suited to the customer-contractor principle, or needs to have special measures taken to ensure that long term intellectual expertise is sustained or databases protected. In the Government’s response to the House of Lords Science and Technology Committee Report on *Priorities for the Science Base* it agrees that there is concern in relation to the research councils, that “there is a danger in placing too great a reliance on contract research income for Research Council Institutes whose primary role is to conduct high quality basic research. Some institutes maintain important national databases which are widely used for both research and management, especially for quality of life issues”. (44). However, their response is far from reassuring—“The Research Councils are fully aware of the dangers of over-dependency on contract income, and are expected to ensure that it does not detract from the high quality of their basic research programmes. They are free to charge what the market will bear.” (45). They then go to say that the Efficiency Scrutiny is looking at it. But the Efficiency Scrutiny does not supply detailed guidance on this point. The OST should do so.

7.4 On the specific question of research councils, Recommendation 27 of the Scrutiny Report is particularly unhelpful and likely to make the situation much worse. Again, this point was made by the House of Lords and the Government recognised the dangers saying—

“the issue of “opening up” Research Council funding has been a live one for some time, and it can be sensibly addressed now that the new Research Council structure is in place. It follows from the new missions of the Research Councils announced in last year’s SET White Paper that the Councils should support research where appropriate for the fulfilment of their objectives, and the DGRC, Sir John Cadogan, will be developing the overall policy on this funding issue with the Councils over the next few months. However, the Government agrees with their Lordships that his consideration must also take into account the importance of maintaining the capacity of the science and engineering base”. (46).

Monitoring this situation and intervening if the capacity of the science and engineering base is threatened is another role which OST should fill.

7.5 In addition to the issue of where the customer-contractor principle should apply and how far the "open market" should be extended there is also the question of 'core' or 'seed corn' finance where the customer-contractor principle does apply and ensuring that departments and other customers take some responsibility for the long-term maintenance of the science and engineering base. Under the original 'Rothschild principles' in 1972 finance was transferred from research council grants to the "customer" departments e.g. MAFF for AFRC, with the intention that customers should sustain the research base in their charge. It said:

"Customer Departments have a responsibility to sustain, as a safeguard for the future, an adequate research capability in their area of concern. This does not mean that they have a duty to retain the capability of every contractor. But it does place on them a special responsibility in relation to certain contractors whose expertise is outstanding or unique or who occupy a central place in the country's scientific activities, such as Research Councils. For these contractors some certainty of funding is essential. In each case Departments are now endeavouring to provide an orderly succession of commissions, with the financial support planned well in advance, and, when changes in commissioning are inevitable, to give reasonable notice to the contractor." (47).

7.6 In many departments this has not happened. Contracts are often very short and can be either adjusted or terminated at very short notice. Also much time is wasted on the transactional costs associated with contracts. Increased competition guarantees that scientists will spend much of their time chasing funds rather than doing science. We had asked the Scrutiny Team to examine the length and type of contracts, the periodicity of agency reviews, and the Treasury accounting rules with a view to easing the ability of contractors to make longer term commitments consistent with the often long timescales of R&D programmes. We are therefore concerned that recommendation 31 may remove such guarantees as there are in the MAFF/BBSRC arrangements, unless the contracts which replace them are sufficiently long term, creating even more dependence on short term contracts for staff and an insecure base for long term research. Short term contracts introduce major uncertainties for both managers and the staff themselves with loss of efficiency on both sides.

7.7 Rothschild also accepted that "customer" departments would need to ensure that to be able to sustain their general research capability the "contractors" should receive some finance, not immediately related to a specific programme of work via a surcharge (10 per cent was suggested as appropriate) on the customer's programmes. This promise too has not been honoured in many departments and certainly not to the level of 10 per cent. It is admittedly difficult for contractors to impose such a surcharge on its customers if no one else is doing so, thus rendering themselves "uncompetitive". It is essential that clearer mechanisms and obligations should be introduced to ensure that departments play their full role in funding strategic and basic research relevant to their responsibilities. Possible ways forward are offered in the Scottish Office "Policy for Science and Technology" which suggests a pragmatic approach for supporting long term research within a more competitive framework. They will continue to provide core funding to sponsored bodies within the "Scottish system" including a "Rothschild" component for seed corn (non-commissioned) research, but they will also provide for "medium term" contracts awardable by competition for up to 12 years, always reviewable twice within the contract period, and for research programmes, not just projects. The new proposals for a combined Defence, Science and Technology Agency, also recognise the problem they say—

"while the technology base will largely be maintained by the services provided to individual customers, it has been recognised that there will be a need for 'corporate funding' to ensure that it remains an adequate long term source of technological knowledge and understanding. A corporate research programme will therefore be created. As a result, the current Applied Research Programme can be focused more clearly on the future equipment programme and will become the contract research programme".

7.8 We are pleased to see in Recommendation 32, that the Scrutiny Report resists the pressure to insist on total institutional separation of "contractor" PSREs from their "customer" departments or research councils and we welcome the support it gives to customers and contractors working closely together to take a "long term view of departmental needs and the part to be played in meeting them by PSREs". Correspondingly we would hope that the PSREs will also receive long term support from the department and attention to their needs, as indicated in the supporting paragraph (7.9). This should include the sort of long term financial commitment envisaged by Rothschild.

7.9 We also welcome recommendation 29 which recognises the importance of close links between scientists, PSREs and departments and movement between them to ensure that the "intelligent customer" role is effectively fulfilled in the contracting process.

7.10 We also welcome recommendation 30 insofar as it enables PSREs to decide for themselves whether and what activities they should subcontract and encourages them to collaborate rather than compete. This will enable them to take decisions on the basis of their own objectives and securing good value for money.

7.11 We welcome also recommendation 28 as a move towards a more "level playing field". However this does not address the problem of a "level playing field" within the European Union, particularly the problems created by the Directive 92/50/EEC *Relating to the Co-ordination of Procedures for the Award of Public contracts* whereby public authorities procuring services are required to advertise in the EC Official Journal contracts worth at least ECU 200,000. The precise impact of the Directive is unclear and the expectation is that because of the complexities in applying the definitions and exclusions in the UK context, clear ground

rules will only be established on a case by case basis in the courts. In general, however, because the UK has gone further than other member states in separating, privatising and contracting-out public research activities, the potential impact of the Directive is greater here than elsewhere.

7.12 While we would accept the need for PSREs to develop their internal accounting systems as suggested in recommendation 33 so that they can increase their efficient use of resources and that there should be greater transparency, this must also be accompanied by other measures to secure a level playing field with all competitors including those in the "private sector" (both commercial and non commercial) and the relaxation of Treasury rules.

The role of the Treasury

7.13 We agree with recommendation 34 but, many of the problems of public funding and being able to seek business from elsewhere arise because of the Government's own policy and Treasury rules, including the tension between the encouragement to seek business outside the government and the refusal to fund such expansion because of its impact on the PSBR. (Report Summary paragraph 9 and paragraph 7.13.)

7.14 A major impediment to long term planning and viability is the Treasury annual accounting system, whether it is for departments and agencies under the annual supply estimate, or public corporations and trading funds operating under the annual External Financing Limits. PSREs are prevented from both carrying over significant funds for future self-investment or from borrowing from the private sector for investment. Underlying this are the more fundamental problems of the control over the PSBR and the definition of what to include in it and the Treasury's inability to distinguish between funds for investment, which will give a return over time, and current spending or transfer payments. The impact of Treasury practices, particularly in this latter aspect of course go far wider than PSRE funding and to the heart of the issue of private finance for public purposes and funding a pluralistic "mixed economy". A practical and non-ideological solution is long overdue.

7.15 There are other detailed rules which can often hamper operations or contribute to an "unlevel" playing field. Some modifications to the rules have been made over recent years but these have been different for different types of organisation and finance. For example, the Research Councils are allowed to charge what the market will bear for their services, while the GRES are limited to full economic cost. (48). They are also far too modest to meet current need for effective operation in an increasingly competitive atmosphere.

7.16 We therefore agree with the Efficiency Scrutiny Report that the ability of PSREs to maximise their opportunities is heavily constrained by Treasury accounting rules and welcome recommendation 35. However, we do not agree with the Scrutiny Report that only those PSREs who are destined for privatisation should be given greater freedom. This freedom should apply to all. As the Transport Select Committee report of TRL said—

"TRL's is public sector status, we were told, in any case constrains it from bidding for contracts from the private sector. We are not convinced by these arguments. TRL's difficulties while an Agency are the result of the application of the Treasury's public sector financial rules and market testing practices, which the Government could relax if it wished. The Government's case is also not helped by the consultant's suggestion that, in order to ensure a smooth transfer of the TRL into the private sector, the Department would have to offer it guarantees of future contracts. Such special treatment for a private sector body is difficult to justify. It also represents a fundamental inconsistency in the Government's position, since it is precisely the unwillingness of the Department of Transport to provide equivalent guarantees, for the TRL while it is an Agency which has been advanced as one of the main reasons for privatisation". (49).

7.17 There must be a modification of many of the more detailed Treasury constraints on more "commercial" modes of operation, transparency and equity in how the rules apply to different types of organisation and funding, and a fundamental overhaul of the public accounting system to bring it into line with current operational requirements and the need to make substantial public investment with the ability to use private finance.

8. IMPLEMENTATION AND THE ROLE OF THE OFFICE OF SCIENCE AND TECHNOLOGY.

8.1 In Chapter 8 the Scrutiny Team sets out its brief proposals for implementation. As will be evident from the foregoing, the IPMS has reservations about some recommendations and opposes some others. In particular it regards the case for either privatisation or fundamental re-organisation to be unproven and indeed potentially very damaging for the public service and engineering base. However, there are many recommendations which we do support and we particularly welcome the stress on the importance of a coherent policy and strategy on the "demand" side. We also wish to see a greater degree of autonomy in the detailed operation of the "supply" side within a framework of basic public support and funding but with greater freedom to raise supplementary income from "private" sources. This will require a stronger OST with much greater clout *vis-à-vis* other departments and particularly the Treasury.

8.2 As the Scrutiny Report notes (paragraph 2.6) the Scrutiny took place before the new measures set out in the SET White Paper could be implemented, including the Technology Foresight and Forward Look processes and various other mechanisms to give the OST an enhanced role in handling cross-departmental issues. While the Technology Foresight and Forward Look processes will provide a necessary indicative

framework for SET “supply” and “demand” in the future this will not be sufficient to secure effective implementation of a national strategy within government or Research Councils.

8.3 The SET White Paper has established certain other mechanisms for securing coordination between Research Councils, primarily through the DGRC; and between Departments, through the Cabinet Committee on Science and Technology which will be responsible for keeping under review the Departments' performance in relation to the Forward Look. They say Departments will be expected to demonstrate:

- adequate systems for consulting those with an interest in the outputs of their research and development programmes, especially industry, and for reflecting the results in their contributions to the Forward Look.
- success in achieving research objectives in conformity with the Forward Look, for example in improving the quality of life, increasing the extent of collaboration with industry and securing commercial exploitation of research results (paragraph 5.6).

8.4 The OST which is in the best position to take an overall view must be strengthened to ensure that the appropriate mechanisms are in place. Ideally this should be possible without taking the drastic step of divesting civil departments of their PSREs as originally advocated by Levene. However, our proposal that the DTI PSREs should transfer to OST would help in creating a stronger OST, in the traditional sense of staff and financial resources.

8.5 It is also vital that as originally recommended by Levene, OST should be at the heart of Government spending plans on science:

- “OST should be responsible for working with spending departments and ensuring that Government priorities are reflected in their S&T spending plans.”
- “the CSA should take the lead in advising Government and the principle Cabinet Committees on overall spending priorities for S&T and on the balance of spending across departments before a final public expenditure settlement” (50).

8.6 We agree with the role foreseen for the OST in recommendations 13, 14 and in the modified form we advocate, 19 and 28. Of crucial importance, however, is their potential role (recommendations 30, 33, 34) in ensuring that the PSREs are able to take full advantage of opportunities to expand without the PSBR limits imposed by the Treasury. It is particularly urgent that in conjunction with the Treasury they produce a financial regime which encourages PSREs to flourish while remaining within the public sector and which solved the topical conundrum of ensuring both private and public finance for the public sector. They also need to clarify the market rules to provide a level playing field to all, while setting clear and consistent criteria concerning which research is to be financed by core departmental funds, and which to be open to competition as advocated in paragraph 7.3 above. The OST also needs to assess how far it is good value for money to allow public sector organisations particularly those within the same sector to compete against each other for contracts, and to ensure that alternative streams of funding are in place where PSREs are not allowed to compete.

8.7 Overall OST should have a role which supports and promotes the aims and objectives of the SET White Paper, and sets the strategic framework while minimising the potential for tactical interference with how this is done. It is also crucial that they carefully monitor the impact of any changes which emerge from the Scrutiny, as well as the general changes set out in the SET White Paper, to ensure that “short termism” does not rule as many fear will happen, that competition ensures that the good drives out the bad and not vice versa, and that the long term comprehensive science and technology base in PSREs is sustained.

8.8 The pursuit of the Government's SET White Paper objectives will not be achieved without well motivated staff effectively deployed. The efficiency scrutiny hardly says a word about the scientists who are doing the work, the impact of the “market philosophy” on the roles and workload of scientists in PSREs; the impact of contract transactions on the ability to focus on the science; and the impact on terms and conditions (eg short term contracts) and on morale. Scientists in the PSREs have been undergoing constant cuts, restructuring and upheaval for the past 15 years and their morale is at rock bottom. The two recommendations in the Scrutiny Report which directly refer to staff (recommendations 19 and 20), are accepted, and in the case of the latter welcomed by IPMS. However, the biggest incentives to efficiency and effectiveness and willingness to adapt which scientists in the PSREs could have would be for their efforts to be appreciated and rewarded, not by privatisation but by benefit to the “public good”, to science and to further investment in scientific resources both human and capital. Above all they need to be fully integrated and valued.

8.9 As the Government recently said in its response to the Committee's inquiry into innovation:

“However, the Government agrees strongly with the Committee's central point (306) that the UK tends to undervalue science and engineering skills. As the Government has emphasised in both White Papers, those with engineering and scientific qualifications have crucial roles to play in development and adapting new technology in all sectors of the economy. Industry at large seriously risks missing opportunities if it fails to encourage the acquisition of world-class skills.

Engineering and science qualifications can and should open up rewarding and fulfilling careers to young people. They will be encouraged to take those topics only if UK firms better utilise and reward the

related skills at all levels and in a range of posts. In particular, too small a proportion of those who reach the top in business, or the "establishment" at large, have a science or engineering background; this is likely to be a factor influencing young people's subject choices. It is also important to improve management skills among practising scientists and engineers, for example by giving them broader and earlier responsibility. Again, action must rest primarily with companies; but professional bodies and universities also have a role to play and this is discussed further below (paragraphs 75-78)." (53).

Perhaps the Government as the major single employer of scientists should be giving a lead!

Notes and References

- (1) Sir Peter Levene and Professor W D P Stewart *"Review of Allocation, Management and Use of Government Expenditure on Science and Technology"*: May 1993, HMSO paras. 1.54 and 1.55.
- (2) The most recent example being the House of Lords Select Committee on Science and Technology 3rd Report on the *Defence Research Agency* London: HMSO July 1994.
- (3) As above paragraph 1.53.
- (4) Cabinet Office News Release "Multi departmental Scrutiny of PSREs. OPSS 16/94. 2 February 1994.
- (5) The CCSU officially complained to the Head of the Efficiency Unit, John Oughton about the delay in releasing the details. He replied that we received it at the same time as it was published. It is difficult to believe, however, given the timetable of the Scrutiny, that a working document had not been available internally for some time.
- (6) Quoted from a statement published by the Royal Society on 16 March 1994 entitled "Scrutiny Exercise".
- (7) Sir Peter Levene in oral hearing on the efficiency scrutiny, House of Commons Science and Technology Committee 13 July 1994.
- (8) Royal Society 16 March 1994 op cit.
- (9) The work "operational" is used to distinguish those scientists who predominantly work in research or scientific services and their management from those who are engaged primarily in policy making, representation or as "customers" whether this is scientific policy making, eg in chief scientist units, as part of broader multi-disciplinary policy units or in general administration or policy making posts.
- (10) In the Braer incident, for example, there was involvement across a whole range of government departments, NDPBs, and through intimate intergovernmental research contacts with Norway. Research effort and scientific facilities were marshalled from the following departments and NDPBs: Marine Laboratory, Aberdeen (SOAFD), Scottish Natural Heritage, Joint Nature Conservation Committee, Macaulay Institute, DTI, and MOD Meteorological Office. Any major environmental incident involves large scale and varied collaboration. It can be marshalled more rapidly and more cheaply where the resources are already part of a normal integrated web of easy communication and interchange of expertise. Another example is explosions in aircraft, where the DRA have expertise covering the whole range of requirements from explosives to aeronautics within the same organisation.
- (11) Efficiency Unit, Cabinet Office—*"Career Management and Succession Planning Study"* November 1993.
- (12) *"Review of the Scientific Civil Service 1980"*—Report of a working Group of the Management Committee for the Science Group (CSD) September 1980, London HMSO Cmnd 8032 paragraph 3.28.
- (13) "Scientists" as referred to here means those with a scientific/technical work background; an additional few may have science based qualifications through the route indicated in paragraph 4.40. Source—Senior Open Structure List May 1994.
- (14) Efficiency Unit Nov 1993 op cit. Graph 20 p 101.
- (15) See for example ESRC funded research project on "The Role of Scientists and Engineering in the Process of Technical Change", reported in ESRC Innovation Update Three 1993.
- (16) 1990-91 are the most recent figures available. The Civil Service Commission Annual Report no longer publishes the subject backgrounds of "fast stream" entrants.
- (17) Cabinet Office Career Management Study. Op cit para 2.17.
- (18) House of Commons Science and Technology Committee *"The Routes through which the Science Base is translated into Innovative and Competitive Technology"*. Press Notice para 13.
- (19) *"Competitiveness: Helping Business to Win"*. Cm 2563 London: HMSO.
- (20) House of Commons Trade and Industry Committee Report on *"The Competitiveness of Manufacturing Industry"*. London: HMSO May 1994 para 345.
- (21) Ibid para 342.
- (22) Sir Michael Atiyah, President of the Royal Society Anniversary Address. 30 November 1993.
- (22) Ibid.

(23) IPMG Corporate Finance '*Department of Transport's Privatisation of the Transport Research Laboratory*'. December 1993—released to Trade Unions on 24 Feb 1994, para 2.3.15.

(24) The situation is even worse than the Efficiency Scrutiny suggests. See IPMS evidence to House of Commons Science and Technology Committee in '*The Forward Look of Government-funded Science, Engineering and Technology 1994*' London HMSO 20 July 1994—pp. 53–61.

(25) This can be demonstrated by the fact that $\frac{2}{3}$ of in-house public sector bids have beaten the private sector competition where "in-house" bids have been allowed to compete.

(26) Professor W D P Stewart—Times Higher Education Supplement, 30 July 1993.

(27) Mrs Lynda Kyle in oral evidence to House of Commons Science and Technology Committee, 13 July 1994.

(28) KPMG Study of TRL op cit para 1.1.

(29) Ibid para 1.4.1.

(30) Levene and Stewart op cit pp 71-72.

(31) Members at AWE have found since it became a "go-co" owned by Hunting-Brae, a private consortium composed of AEA Technology and Brown and Root other government establishments and personnel both in the UK and abroad have been less willing to communicate openly with them.

(32) Government Response to the First Report of the House of Commons Select Committee on Science and Technology, 1993–94 Session '*The Routes through which the Science Base is translated into innovative and competitive technology*'. Cm22659 London P: HMSO Sept 1994 para 60.

(33) Levene and Stewart op cit p37.

(34) KPMG TRL op cit para 3.2.1.

(35) KPMG TRL op cit para 1.3.2.

(36) House of Commons Transport Committee 2nd Report '*Privatisation and deregulation of Department of Transport Agency work*'. March 1994.

(37) Levene and Stewart op cit para 57.

(38) '*The Civil Service: Continuity and Change*' DM 2627 London HMSO July 1994.

(39) NEL was established in 1949 with the aim of providing an R&D service to UK industry and government and became an Executive Agency in 1990. It occupies a unique position as a provider of technological, and in particular engineering, support for British industry. It combined research and market orientated activities on a broad front. Government funding is necessary to underpin key areas of the Laboratory's work and we therefore believe that keeping NEL in the public sector is the best way of maintaining its independent expertise.

Since becoming an Agency the prime objective of NEL has been to prepare for privatisation despite unsuccessful previous attempts. NEL has attempted to adopt a commercial approach to business without first defining what that business should be. There has been no vision of what sort of organisation NEL wishes to become and of what kinds of engineering research and market technologies should be the core focus. This lack of a "mission" for NEL combined with various organisational defects (see below), has resulted in a lack of strategic research and to the carrying out of fee paying work on an "ad hoc" basis. This in turn has had devastating consequences for areas of NEL's previous expertise. Between 1989 and 1994 its staff have been reduced from 580 to 365 and it is due to decline further.

For example, the Scottish Calibration Centre was formerly a unique and extensive calibration facility whose services were widely used by UK industry and by overseas customers. This service could never have been deemed properly "commercial" since the service arose as a side activity to metrological research and development carried out by a multidisciplinary team of over 45 staff. The breaking up and dispersal of this integrated research team during NEL reorganisation and staff cuts has lead to the closure of the calibration facility. The support that it formerly provided to the UK machine tool and engineering industry can no longer be provided by NEL. It is likely that UK industry will now have to seek these very specialist services from providers abroad.

(40) Thus in commenting on the SET White Paper:

"The CBI has also suggested that Government Laboratories, which provide a unique and well-regarded national asset, should continue in the public sector". CBI News March 1994 p.21.

and the Royal Society in the statement by Sir Michael Atiyah, 16 March 1994 op.cit.

"Most, if not all, Government research establishments undertake work that is in the public domain and for the public interest. Perceptions of their integrity, crucial to their effectiveness, rest on their having no sectoral or financial interest in the results of their work. Such establishments must therefore continue to be in public ownership, to derive the bulk of their income from public sources, and to be constituted at arm's length from the Executive of the day".

(41) the KPMG TRI study op.cit. said:

University research has the following main weaknesses:

- project management: although many universities are improving their ability to meet research customer requirements and timetables, it is undoubtedly still the case that many university departments give priority to their own research programmes. Research may be undertaken and supervised by academics who have more interest in their own reputation and research interests than simply offering a research service to customers. Having said this, we are aware that several universities have taken active steps to separate their research and consultancy services from mainstream university research in order to improve the degree of customer focus, often by establishing spin-off companies which employ professional research managers;
- continuity: the bulk of research undertaken by universities for outside customers is, in practice, done by research students and/or research staff on short-term contracts. This means that it is unlikely that the staff who actually conducted a particular piece of research will remain there for long after projects end. This both makes it difficult to commission further work which builds on previous work undertaken, and may mean that questions arising in the months after the conclusion of a particular project cannot be answered because key staff have moved on.

(42) For example a better and more detailed scrutiny which included HSE Laboratories would have shown the following:

HSE Buxton laboratories have a principal role to provide advice to HSE to ensure the safety of workers. They are thus concerned with the hazards that may arise in work places, especially those in the chemical process industry and allied works. Of the dangers which arise, fire is only a part, and there are only a very few members of staff working full-time on this aspect.

BRE's Fire Research, on the other hand, has about half the country's fire research effort concentrated in it. It's principal role is to give advice to DoE so that Building Regulations properly ensure public safety. It is thus concerned with a wide range of buildings and other areas of fire and fire-related safety.

Informal links are already in place between the two establishments.

(43) The Government has insisted that in many cases the *status quo* is ruled out for consideration. Examples include the DTI Laboratory reviews, the TRL review, and the current "Ownership Study" of NRI by the ODA.

(44) "Priorities for the Science Base" Government Response to the Second Report of the House of Lords Select Committee on Science and Technology, 1993-94 London HMSO Cm 2636 July 1994. p. 19.

(45) Ibid.

(46) Ibid p. 20.

(47) Framework for Government Research and Development July 1972 London, HMSO Cmnd 5046 paragraph 16.

(48) Cmnd 2636 July 1994 op.cit. p.19.

(49) Transport Committee Report, March 1994 op.cit. p. (xiv).

(50) Levene and Stewart op.cit. paras. 1.9 and 1.10.

(53) Government response on innovation September 1994. Cm. 2659 op.cit. 63 and 65.

Science and technology funding crisis in the UK: background to the scrutiny

1. The Government's *Forward Look* shows the UK's annual investment in R&D, public and private, is £12.6 billion. It notes that this is "rather less than some other G7 countries". (3.12). In fact, as the statistical supplement (section 1.6) and the more detailed Cabinet Office publication "International comparisons of Research and Development Spending" (1992) show the UK has slipped badly both compared to its own position in 1981 and by comparison with other OECD countries. Thus, for example Table 1 (p.15) of the Cabinet Office publication shows that whereas in 1981 the UK was spending 2.42 per cent of its GDP on R&D, in 1990 this was 2.21 per cent and the UK had slipped from 3rd position among OECD countries to 7th. Figures since 1990 show no improvement. Indeed, as it shows in *Forward Look* table 1.6.4. the percentage of GDP has slipped further to 2.1 per cent in 1992 with 2.6 per cent in Germany, 2.4 per cent in France and 2.7 per cent in the USA.

2. Within the total expenditure on R&D in the UK publicly funded R&D has fallen from 43 per cent of the total in 1989 to 35 per cent in 1992; and within that publicly funded proportion a major fall has taken place in spending by departments. The government claims to have increased funding for the Science and Engineering Base by six per cent in real terms between 1992-3 and 1994-5 and plans to hold funding steady. But this only relates to the "Science Vote" which accounts currently for only 37 per cent of government spending on S&T. Departmental spending which accounts for the remaining 63 per cent, has declined dramatically and will continue to do so in many areas under the *Forward Look* to 1996-7. Table 1.2.3. in the statistical supplement of *Forward Look* provides the raw data for changes over the decade 1986/7 to 1996/7. A summary of its main features is given in Table 1. It shows a 32.8 per cent overall decline in total public funding for R&D between 1986 and 1996. The situation on public funding is shown graphically in Table 2.

Table 1.

Summary of table 1.2.3.

£ million (base year 1992)

Net Government expenditure on S&T in Real Terms 1986-87—1996-97 (i)

	Out-turn 1986-87	1992-93	Plans 1996-97	Percentage Change	
				92-93 86-87	96-97 86-87
OPSS(ii) and Research Councils	841.3	1,021.8	1,085.0		
HE Funding Council	1,032.7	963.3	878.8		
Total "Science Vote"	1,874.0	1,985.1	1,963.8	+ 5.9%	+ 4.8%
Civil Departments	1,707.9	1,218.2	910.1	- 28.7%	- 46.7%
Defence	2,784.8	2,220.9	1,826.4	- 20.2%	- 34.4%
Total Departments	4,492.7	3,439.1	2,736.5	- 23.5%	- 39.1%
Indicative contribution to EC	136.7	250.8	313.3		
Grand Total					
Real Terms	6,503.4	5,675.0	5,014.0	- 12.7%	- 32.8%
Cash Terms (iii)	4,534.0	5,675.0	5,725.6	+ 25%	+ 26.3%

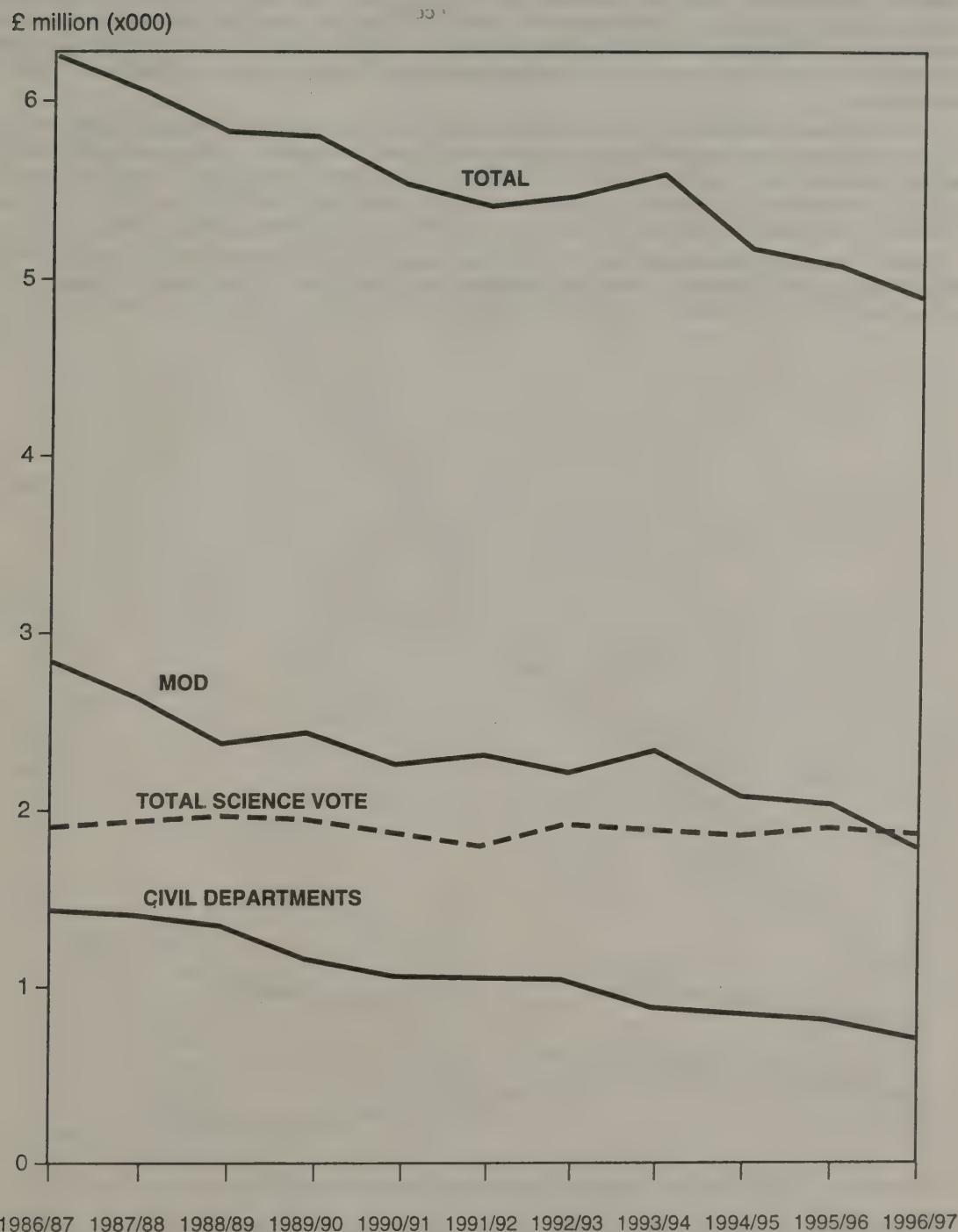
i. The S&T figures are used but they differ very little from the R&D figures in terms of quantum and pattern over time.

ii. OPSS forms a very small percentage. £19.8m in 1992-93.

iii. Cash terms are taken from Table 1.2.2. in *Forward Look*.

Table 2.

Net Government expenditure on R&D: Real Terms
1986/7–1996/7
(Base Year 1992/93)



3. The virtual halving of civil departments' S&T expenditure over the decade will have major consequences for research councils, institutes and GReEs who rely heavily on departmental funding. Moreover, the money saved by major cuts in defence research has not been diversified into civil research but has gone straight into the pockets of the Treasury. The decline in the major civil department spenders on R&D is shown in Table 3.

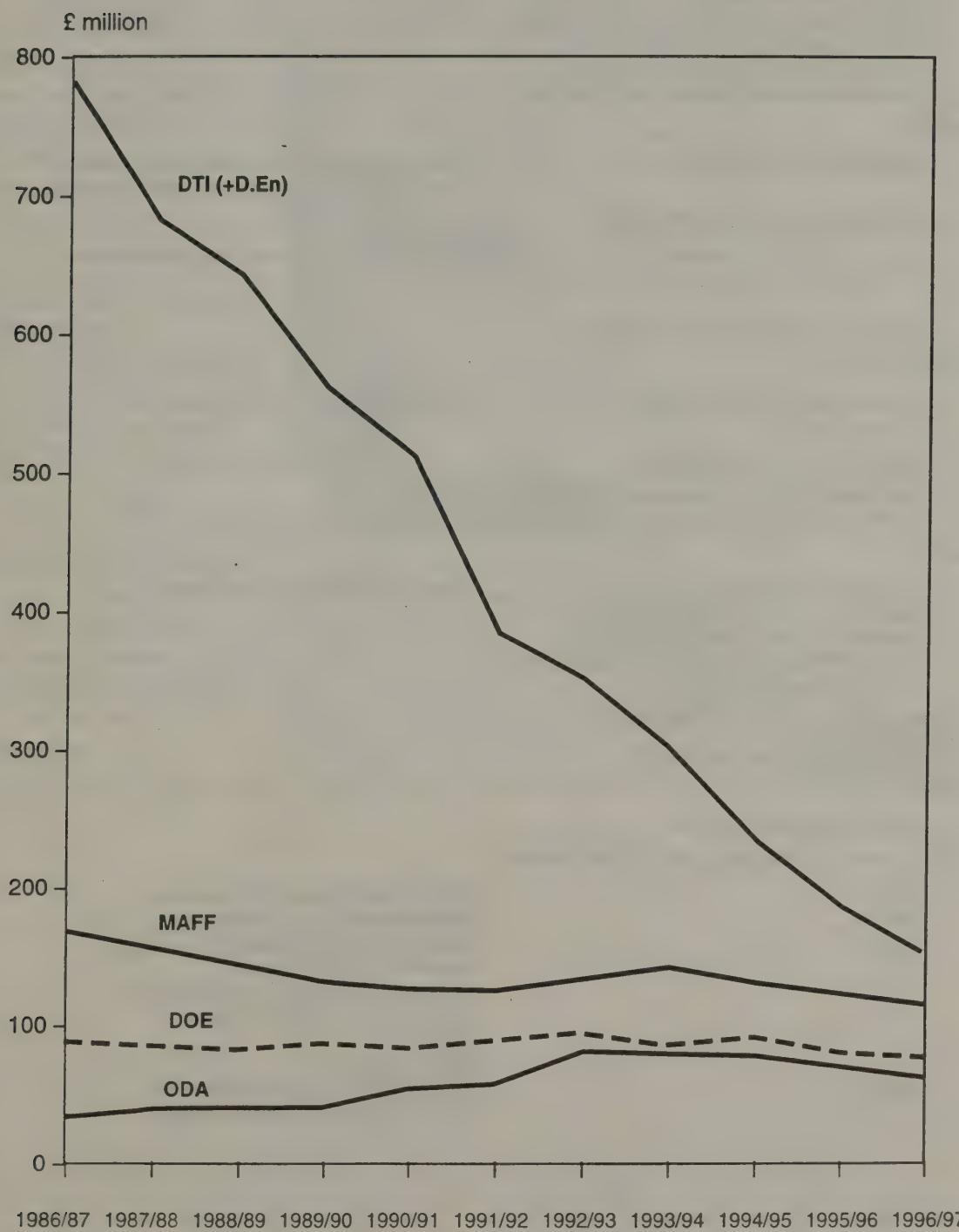
4. The decline in civil S&T spending is not only the result of cuts in nuclear energy (particularly the fast reactor programme) and increasing receipts from Launch Aid as the Government suggests. While they have clearly played a part the cuts in DTI have gone much deeper than that. Over the period 1986-87 to 1991-92 when the Department of Energy was separate from DTI and covered nuclear expenditure, DTI expenditure declined from £462.1 million to £330.9 million in cash terms. Over the period 1992-93 to 1996-97 its budget excluding the ex-Department of Energy component and excluding launch aid is set to increase marginally from £220.3 million in cash terms to £242.5 million; which is still likely to mean a decline for DTI spending in real terms.

5. As far as energy spending is concerned not only has the nuclear energy S&T budget been severely cut, thus damaging long term research into the nuclear option for the 21st century, but non-nuclear S&T has also suffered, as can be seen from table 2.18.2. For example, expenditure on "renewables" is to be cut from £22.9 million in 1991-92 to £16.3 million in 1994-95 and we now know from the Government's recent review of renewable energy research that the budget is to be cut further to £10 million in 2005 in cash terms.

6. Moreover, other departments have been reducing expenditure substantially. For example, the MAFF budget which not only finances its own GReEs but also plays a major role in funding AFRC (now BBSRC) has declined from £224.8 million in 1986-87 to a planned £154.2 million in real terms in 1996-97.

Table 3

**Net Government expenditure on R&D in selected
civil service departments: Real Terms
1986/7-1996/7**



ANNEX 2

LIST OF PUBLIC SECTOR RESEARCH ESTABLISHMENTS WHICH POTENTIALLY QUALIFY FOR SCRUTINY

MAFF:

Central Science Laboratory (Slough)
MAFF Food Science Laboratory (Norwich)
MAFF Fisheries Laboratory (Lowestoft)
MAFF Food Laboratory, Torry (Aberdeen)
ADAS Laboratory—Wolverhampton
Pesticides Safety Directorate (Harpden)
Central Veterinary Laboratory (Weybridge)

MOD:

Defence Research Agency Met Office Atomic Weapons Establishment
Chemical and Biological Defence Establishment

DEPARTMENT OF ENVIRONMENT:

Building Research Establishment Forestry Commission research laboratories

HSE:

Explosion and Flame Laboratory etc

HOME OFFICE:

Forensic Science Service Agency

SCOTTISH OFFICE:

Marine Laboratory (SOAFD)

Freshwater Fishes

Scottish Agricultural Science Agency (SASA)

11

Laboratory of Government Chemist
National Physical Laboratory
National Weights and Measures Laboratory
Warren Spring Laboratory

DEPARTMENT OF TRANSPORT:

Transport Research Laboratory

ODA:

Natural Resources Institute

RESEARCH COUNCILS AND OTHER NDPBS:

AFRC
SERC
NERC

SARIs

Horticulture Research International
Metropolitan Police Laboratory
Joint Nature Conservation Committee
English Heritage Research
Commonwealth Agricultural Bureau
Royal Botanic Gardens, Kew
BNFL
AEA Technology
Royal Botanic Gardens (Scotland)
The Scottish Agricultural College

TIMETABLES FOR EFFICIENCY SCRUTINY

Appendix 2

ANNEX B

PSRE SCRUTINY TIMETABLE

January	February	1994	March	April
LIFE SCIENCES				
FISH				
PLANT				
FOOD				
ANIMAL				
HEALTH				
ENVIRONMENT				
PHYSICAL SCIENCES				
ANALYTICAL				
ENGINEERING				
FORENSIC				
ENVIRONMENT			Emerging Findings	Final Report
<u>Consultation</u>			Advisory Panel / Scientific Panels Council of Civil Service Unions	

ANNEX 4

Comments on the two models for organisational structures

This sample of comments refers to recommendation 10 and the supporting detail contained in Annex O, option 3(b) and option 4 on pp. 129-131.

Model 1.4 market sector oriented agencies

The boundaries are artificial and can impede effective collaboration within existing groupings. Particular objection has been taken to the artificial division between marine and terrestrial environment. Thus the Plymouth Marine Laboratory (MERL) members note:—

“Many major environmental issues require simultaneous study of both terrestrial and marine systems and the links between them, this is emphasised by the LOIS (Land Ocean Interaction Study) NERC community research project, which in itself associated with major European (ELOISE) and international (LOICZ) initiatives in the same area. With its present structure, NERC’s research, thus IH, ITE, POL, DML, PML and BGS are all contributors to LOIS. Separation of the marine laboratories would put unnecessary difficulties in the way of developing this kind of work in the future. With the recognised necessity for an understanding of interactions in the whole biosphere, the division between terrestrial and marine environmental science appears more and more anachronistic. Model 1 (Paragraph 10, p.8) to create ‘market sector’ oriented groupings would be a retrograde step.”

The Proudman Oceanographic Laboratory (NERC) members make a similar point about the artificial division but also question the placing of “marine” ownership with Scotland. They say

"There is likely to be non-specific/lack of interest and understanding by the Scottish Office, hampering it in carrying out the three main responsibilities of an 'owner', as given in the Report's 5.3, viz.

- focus for Ministerial accountability
- strategic direction
- provide "basic" funding.

'Ownership' by a Government Department/Agency could also compromise POL's reputation for impartial science."

The DFR (MAFF) members also make points about the logic of the division and the issue of changed "parentage". They work so closely to MAFF on departmental policy issues that a move to the Scottish Office would threaten the effectiveness of that work and the resources and interchanges associated with it.

On the boundary issue again, IGER (BBSRC) members make the point that the presence of MLURI and the Forestry Institutes in the non-marine environment section makes little sense because they are only indirectly concerned with natural eco systems; their main focus being production oriented management.

Model 2

There is little general support for this model either. Within the Scottish Office "owned" sector the Lasswade Laboratory (CVL-MAFF) is concerned that the geographical split would leave the laboratory vulnerable since it depends so heavily on MAFF funding which might not be so forthcoming if MAFF was not its owner. Lasswade also forms an integral part of the CVL and to separate its ownership from the rest of CVL would jeopardise its and their effectiveness.

Members in NERC are concerned that the proposal to put the Dunstaffnage Marine Laboratory under Scottish ownership would intellectually isolate it from NERC's Centre for Coastal and Marine Sciences.

Members in Scotland would prefer to remain with their current "parents" but linked, as they already are, within the "Scottish System." Thus, the SABRI Branch writes

"We would argue that the Expanded Scottish System proposed in SOAFD's 1993 document 'Policy for Science and Technology', is preferable. The proposed Expanded Scottish System could include SABRI, SAC, SASA, RBGE and FRS. Historically the SABRIs collaborate with each other and, individually, with Universities and other local research establishments. The Expanded Scottish System should be given the chance to develop further, forming links between the organisations identified by SOAFD. The other organisations identified by the Scrutiny Review for inclusion in the Scottish "Research Council", while remaining with their parent body, should be encouraged to participate in further collaboration with the Expanded Scottish System. It should be noted that in the past collaboration across different ownership barriers has been possible and there is no reason to suppose that it would cease to happen in the future."

Memorandum submitted by the Natural Environment Research Council (11 October 1994)

GENERAL COMMENTS

The Review

The case for the review, as reflected in the Science, Engineering and Technology White Paper (WP) and the terms of reference (ToR) for the Scrutiny, was based on the notions:

- (i) that many of the services currently provided by Government Research Establishments (GRES) could be carried out in the private sector and that privatisation was a realistic prospect for a number of establishments (WP para 5.12);
- (ii) that for those establishments that had to remain in the public sector there was scope for rationalisation and that revisions to their organisation and management could provide better value for money (ToR).

The initial focus as outlined in the White Paper appeared to be on GRES and the scope for extending and accelerating the operation of market forces in relation to the S&T which Government Departments commission in support of their policy, statutory, regulatory and procurement responsibilities (WP para 5.9). In the event the review also encompassed a part of the science base, through the inclusion of Research Council Institutes (RCIs) alongside the GRES.

There are fundamental differences in the primary roles of GRES and RCIs. Although they carry out some R&D, the GRES are primarily concerned with the provision of scientific and technical services and advice to underpin Departmental policy. The primary role of the RCIs relates to the science base missions of the Research Councils. The NERC institutes undertake high quality research survey and monitoring which is long-term and large scale in nature, and aimed at the provision of impartial, interdisciplinary knowledge of the environment. They are the custodians of many UK and international environmental databases and also provide infrastructure support for science base research and training in the universities. Although NERC institutes are, together with universities and other private sector suppliers, part of the broader supply base for

Departmental research requirements, this contract work only represents a part of their activity and is underpinned crucially by their main science base activities.

NERC therefore has reservations in relation to the choice of establishments examined. RCIs with their very different missions to GRES should have been excluded. Alternatively, if there was a real concern about overlaps and minimising the costs of overheads associated with the delivery of good and effective science funded from the public sector, then all establishments receiving significant public sector research funding, including university departments, units, centres etc., and executive agencies such as the Meteorological Office, should have been included.

As it stands, the review does not provide a balanced picture of research establishments in receipt of significant public sector funding. There was little attempt to review what science was being done and why, or to explore points of overlap, duplication etc in the national research effort funded by Government. Whilst the team did not have the expertise themselves to undertake a scientific review, their conclusions and recommendations, if implemented, would potentially have a significant impact on the science base.

Given the very broad scope of the Scrutiny, and the diversity of the establishments reviewed, it is questionable whether it was really possible in the time allowed for the team to adhere fully to the "normal efficiency scrutiny procedures" (para 1.6) of seeing what actually happens on the ground, and for full interaction and discussion on the work being done by the establishments.

The Recommendations and Proposals

Efficiency

The Scrutiny does not attempt any cost-benefit analysis of the proposed models of ownership or rationalisation. To propose change simply on grounds of rationalisation, customer-contractor relationships or regional interest is to consider only a small part of the cost-benefit equation. The costs of relocation and/or rationalisation are very large. The gains in terms of scientific output and value for money would have to be demonstrably substantial to compensate for such a drain on R&D budgets.

Rationalisation reduces choice and competition. Model 1 is an example of this and could, in the longer term, lead to reduced efficiency and effectiveness.

The timing of the Scrutiny has not allowed full account to be taken of the significant post-White Paper changes in the Research Council system. Many of these will lead to increased efficiency and effectiveness. Furthermore, significant restructuring has taken place in NERC since 1 April 1994 with the abolition of the Swindon-based Science Directorates, thus devolving more responsibility to the institutes, and the establishment of two new institute groupings (the Centre for Ecology and Hydrology and the Centre for Coastal and Marine Sciences). These changes, which are acknowledged only in a footnote on p129 of the Report, will lead to rationalisation, where appropriate, and to clarification of customer-contractor relationships within NERC. Rationalisation within NERC will take account of its regional customer base.

Provision of Scientific Expertise and Advice

NERC considers that both of the report's preferred options for new organisational/ownership models will weaken rather than strengthen the effective provision of scientific expertise and advice on environmental issues.

- The dismantling of the very effective (and greatly admired overseas) UK capacity for integrated environmental R&D and advice that is present in NERC would reduce efficiency significantly.
- Effective environmental advice requires strategic, interdisciplinary science. The development and management of areas of science such as global change, land-ocean interactions, ocean-atmosphere interactions, climate processes and impacts, coastal zone processes, integrated studies of pollution effects, could potentially be jeopardised by fragmentation of the UK environmental science capability.
- With specific respect to marine sciences, the need has not been understood. It is considered that the only aspect of national concern worthy of comment is fisheries (see p130 of the Report). This is a total mis-representation of the worth of marine sciences to the UK. Marine science and technology produces benefits in at least eight sectors, including climate prediction, national defence, shipping, communications, coastal defences, marine pollution, and offshore energy and mineral extraction, as well as fisheries. Any recommendation based on the misunderstanding that only fisheries is important will lead to inefficiency and seriously weaken the country's ability to undertake and apply marine science to wider wealth creation and quality of life issues important to the UK.

Under the change of ownership models the report envisages a transfer to the new owner of gross running costs and some capital provision but that "customer" funding would remain with the present customer. Even with this apparent safeguard, NERC would be concerned that, in the face of reducing Government funding, a Departmental owner would be forced to protect the scientific service requirements related to immediate policy needs. The candidates for rationalisation in the streamlining process expected to be achieved through the groupings of GRES and RCIs, would therefore fall on the science base aspects of the work, thus leading to a significant weakening of the underpinning science base needed in the longer term. Moreover, the changes

proposed would also impact upon NERC's ability to plan and act strategically across the whole of the environmental science base; by ownership of its institutes, NERC can ensure harmonisation of long-term plans for infrastructure and science programmes.

Wealth Creation and Quality of Life

The report's proposal (para 7.16) that establishments that remain in the public sector should have a limitation placed on their non-Government activities is shortsighted and appears at variance with the White Paper emphasis on meeting the needs of users. Unless Government is prepared to act as a proxy for the wide range of potential users of NERC research and fund establishment programmes accordingly, this proposal will severely impede the contribution of NERC research institutes to wealth creation and quality of life.

Privatisation and Transfer to Universities

NERC supports the view that none of its research institutes is a suitable candidate for privatisation. The nature of their core research, survey and monitoring programmes and their role in providing impartial, long-term, large-scale interdisciplinary strategic knowledge about the environment, make them inappropriate for privatisation.

NERC is active in developing links with universities and the private sector in general but considers that there are very real dangers in the report's proposal that Departments and Research Councils should publicly declare themselves open to approaches from private sector firms and universities wishing to discuss the potential for taking on some or all of the activities of individual research establishments.

NERC supports the principle of such transfers where this is in the best interests of the science and its application, but considers that a public declaration of openness would be seen as an invitation to asset-strip commercially responsive activities of interest to the business sector and leading edge basic research of interest to the university sector. The success of the NERC institutes lies in their high quality, multidisciplinarity and multifunctionality. Piecemeal destruction of this would severely damage their capacity to pursue their mission of long-term high quality strategic environmental research, survey and monitoring applicable to a wide customer base. Their lead role in planning and facilitating UK contributions to international science programmes, their public service functions of curation of national collections, custody of many UK and international environmental databases and provision of information would also suffer.

A role of the NERC institutes which is quite different from that of university departments is to provide impartial, long-term, large-scale, interdisciplinary strategic knowledge about the environment. This work has to be at arm's length from government but in the public sector (to ensure impartiality); it has to be long-term (to document and understand slow, cumulative processes); and it has to be strategically driven (to ensure that emerging environmental issues and scientific opportunities are encompassed). NERC can guarantee long-term commitment in areas of national priority because the support of such activities is written into its mission. Such long-term commitment cannot be necessarily guaranteed in universities because of their other major responsibilities (eg education and training).

Both government and private sector users in the UK and overseas buy expertise, knowledge and technology from NERC institutes, placing considerable importance on the continuity of their knowledge and information base and their independence. The Mining Association of the UK has, for example, recently highlighted the importance to their industry of the consistent and centralised approach they find within the British Geological Survey to the gathering, processing and curation of mineral resource and other related data critical to their industry and for land use planning. They have expressed concern that through the policy of "market testing", the provision of information services for the minerals industry could be split up; in their view it is simply not worth risking sacrificing value for money provided by the BGS for the possibility of a lower price.

COMMENTS ON SPECIFIC RECOMMENDATIONS

Privatisation and Transfer to Universities

Rec 3: Transfer of PSREs to Universities

NERC supports this recommendation in principle and will continue to examine the potential for transferring PSREs to universities where appropriate.

NERC accepts that there are cases where full transfers can be justified on scientific and efficiency grounds and has acted accordingly. For example, in 1987 part of the NERC Institute of Marine Biochemistry was transferred into the University of Stirling as the Unit of Aquatic Biochemistry; in 1990 the Bangor Station of ITE was re-located and housed in UCW Bangor; and in 1995 the Institute of Oceanographic Sciences Deacon Laboratory and the NERC Research Vessel Services will transfer to the Southampton Oceanography Centre under the management of the university; and options to transfer the Sea Mammal Research Unit to a university are currently under review. Such transfers are expensive, however, and unlikely to be appropriate for those establishments involved in large scale, long-term, strategic research, survey and monitoring, where

continuity and specialist infrastructure support are important. Here the development of collaborative links and networks between research establishments and universities is the best way forward.

It should, however, be noted that transfers to a single university could also impair the ability to collaborate impartially with departments in other universities thereby reducing, rather than enhancing, university linkages.

Full transfer of a research establishment to a university might satisfy the definition of "privatisation" but there are no grounds for assuming that it would improve prospects for "selling services". Transfers of research establishments in whole or in coherent subgroups will generally involve groups of scientists of at least Departmental size in university terms. It can only lead to creation of more University Research Institutes/Centres/Units, whose efficacy has not been examined by the Scrutiny or any other central review of R&D organisation in the UK.

REC: DEVELOPING EFFECTIVE FORMAL LINKS WITH UNIVERSITIES

NERC fully supports this recommendation. The further strengthening of university links is a strategic objective of all NERC research establishments.

NERC has a strong track record in relation to linkages between its institutes and universities. Current links include:

- joint collaborative research ventures in the UK, for example through NERC Community Research Projects and Special Topics which in 1994-95 will provide £15.6 million of support to universities, representing 37 per cent of the NERC grants budget;
- joint collaborative ventures overseas, for example through EC projects;
- formal arrangements for NERC staff to be members of university faculty boards, curriculum committees, to hold joint appointments or honorary positions at professorial, reader, lecturer and research fellow levels and to act as external examiners;
- arrangements for NERC staff to act as joint supervisors for postgraduate projects (362 PhD and 76 MSc external students were supervised by NERC staff in 1992; currently 126 NERC CASE studentships are with NERC institutes);
- contributions to university courses in terms of lectures (1,410 lectures and seminars given in 1992) and leadership of field visits.

Some specific examples of formal links between NERC institutes and universities are: those between BGS and Leicester; between ITE Merlewood and the Institute of Freshwater Ecology and Lancaster, between the Institute of Hydrology and Reading; a joint programme on molecular ecology, including joint appointments, between ITE Banchory and Aberdeen; the development of a Marine Sciences Network linking the new Centre for Coastal and Marine Science (CCMS), and in particular the Plymouth Marine Laboratory, with five universities in England and Wales (Warwick, East Anglia, UCNW, Plymouth and Bristol) with discussions in hand on extending this network to Scottish universities; and a new link with Leicester whereby it will be the employer and joint-funder of the new Head of the NERC Isotope Geosciences Laboratory at Keyworth.

Again, NERC does not believe in one model. Networks are often better than single university links.

REC 6: PRIOR OPTIONS REVIEW OF RESEARCH COUNCIL INSTITUTES

NERC supports the principle of this recommendation but considers that such reviews should be incorporated in independent review systems already in place in the Research Councils rather than setting up a further layer of separate reviews co-ordinated by OST.

NERC employs a Science Management Audit (SMA) system for its research establishments. Such audits, which are carried out by external advisors, take place at regular intervals of 4-5 years. NERC proposes that this recommendation would best be met by incorporating a formal Prior Options test in the terms of reference of each SMA to examine the need for the service, and the scope for privatisation, contractorisation or transfer to a university. NERC's SMA procedures are currently under review, so this could easily be incorporated.

In the past 10 years a number of NERC institutes (eg BAS and BGS) have been involved in several major government-led exercises reviewing remits, status and funding. Such continual review, which destabilises long-term strategic planning and places additional burdens on the science budget and staff, must be avoided.

REC 8: DECLARATION OF OPENNESS TO APPROACHES FROM PRIVATE SECTOR FIRMS OR UNIVERSITIES FOR ALL OR PART OF PSRE ACTIVITIES

This recommendation pre-supposes that PSREs are not already open to such approaches. This is not the case in NERC.

As noted in response to Rec 3, NERC has transferred scientific activities into universities and continues to review such opportunities on the basis of scientific effectiveness and financial efficiency.

Market testing also exposes various elements of functionality to commercial sector interests. Of the 25 services and units funded by NERC Scientific Services, 17 will by 1995 be in the private sector (university or industry). The remainder are being systematically market tested, with NERC Computer Services being tested next, in 1995-96.

Neither private sector firms nor universities are likely to be interested in those elements of strategic surveying and monitoring which make up an important component of NERC institute core programmes. Similarly the "public service" functions of curation of national collections and provision of information do not provide the short-term financial returns likely to be required by the private sector.

Asset stripping of activities arising from strategic research would interest the private sector when an applied multi-customer capability had been developed. This would severely damage the capacity to pursue long-term, high quality strategic environmental research and the ability to transfer knowledge and understanding to a broad user community. Removing commercially responsive activities would destroy the close links in NERC institutes between strategic science and its applications; removing certain elements of basic and strategic research would destroy the continuity and coherence of the research effort and damage the surveying and monitoring process by separating it from the research that underpins it and to which it is applied.

Organisational Structures

Rec 10 : Organisational/Ownership Models

NERC rejects both of the options (Model 1 and Model 2) recommended for further consideration. Either model would critically weaken the UK's holistic, multidisciplinary capability for environmental research, survey and monitoring supported by Government most recently in the 1993 White Paper on Science, Engineering and Technology and envied by many other countries.

Model 1

NERC sees major disadvantages of this Model. It generates an organisational barrier between research establishments involved in onshore and marine environment work just at a time of increasing concern over the processes operating across this important environmental interface and when the need for an integrated approach is perceived as essential. The split ownership of the environment science base research establishments would hinder the implementation of high priority strategic research across environmental interfaces, such as NERC's recently started LOIS (land ocean interactions) and ACSOE (atmospheric chemistry in the oceanic environment) CRPs. Ownership enables direction of the research effort, the development of appropriate collaborative links, and the provision of support for the wider community within such flag ship projects. At the very least split ownership will increase the bureaucracy involved in setting up complex interdisciplinary programmes and confuse the two missions (R&D versus S&T) which will reduce efficiency and co-ordination. At worst it will positively discourage interdisciplinarity.

The Scrutiny team acknowledge these disadvantages, at least in part, (Annex O p130 "Cons") but appears to consider that the additional advantage cited for this Model, "that it would remove the awkwardness of Research Councils providing significant amounts of S&T to Government Departments", as opposed to a Model which retains the totality of the environment mission (Model 3 (a)), outweighs them. NERC believes that this is not the case and signals a lack of understanding of the importance of interdisciplinary research on the environment and management effort that is still needed to bring it about. It also ignores the fact that NERC (and the Research Council) laboratories are well used to acting as contractors to Departments of their R&D needs; there is no reason to suppose that under suitable arrangements the Councils could not respond equally well to wider departmental S&T requirements. The information of larger groupings is already in hand within NERC through the establishment of the new Centres. The other "pros" cited for this model, that it would reduce overlap and increase strategic focus, are not considered valid because NERC does not believe that there is substantial overlap in the marine area and the increased strategic focus referred to (ie fisheries) is, as stated above, only one of the applications of the marine sciences.

It should be noted that Model 1 shows an internal inconsistency in its treatment of the ownership of basic research. It is proposed that the agricultural research establishments dealing with basic research should transfer to the Research Council system, mainly under the ownership of BBSRC. Yet the marine research establishments dealing with basic research are proposed for transfer to Departmental (Scottish Office) ownership.

The model as described in Annex O of the Scrutiny Report includes the NERC Research Vessels Service (RVS). The RVS is now committed to a transfer to the University sector as an integral part of the

Southampton Oceanography Centre, albeit that the ownership and operation of the fleet will remain under NERC control. An alternative approach to integration of ship support requirements, not involving changes in ownership, is discussed in response to Rec 18 on PSRE "clubs".

Model 2

NERC sees the following major disadvantages of this option. It generates an organisational barrier at the England-Scotland border. This is neither an environmental interface nor one justified on scientific arguments or distinct supplier/user communities. As currently framed this option would separate ecological research in Scotland from NERC's hydrological, freshwater biological, atmospheric, geological and marine capability at a time when, as already noted, environmental problems increasing demand multidisciplinarity. Similar arguments to those advanced above on the development of interdisciplinary research apply, in this case in relation to the treatment of the UK as an entity for environmental research. Environmental processes are no respectors of political boundaries, even if policy responsibilities are split. For example in order to understand events in the North Sea there is a need to know about processes in the North Channel around Scotland. This option is unlikely to lead to sensible rationalisation; indeed it is likely to introduce new costs associated with duplicative management and co-ordination structures, and may well lead to duplication of scientific effort either side of the Border.

The first and second "Cons" advanced by the Scrutiny team themselves for this model (Annex O p132) indicate that the new mechanisms would need to be introduced to get over the scientific awkwardness of a geographical divide. They appear to cancel out the team's own third and fourth "Pros" on p131. The "Pro" of local sharing of facilities is not substantiated; any cost saving could well be cancelled out by the new co-ordination mechanisms needed and duplication between countries. This model would also reduce NERC options for rationalising within the new Centres and does not address the main overlap issues in the agricultural area.

Other models are discussed in Annex O of the Report.

Of the four main options listed NERC supports the principle of market sector-oriented agencies. However, as stated above, we cannot support a split of environment between marine and non-marine agencies.

The option considered by the Scrutiny to create a single body for integrating UK environmental research (proposed under Models 3(a) and 3(c) in Annex O) appears to have been discounted without argument of the case against it. NERC as the lead UK body for environmental research, survey, long-term monitoring and training, would support a full cost-benefit analysis of the "environment research agency" option before any decisions to rationalise/transfer ownership were made; the objective should be to optimise the science contribution to the UK. It would be important in any such development to maintain the distinction between long-term basic and strategic science and scientific and technical services and advice to meet Departmental policy needs.

A further option which was not considered is to maintain the status quo in the environmental sciences area on the basis that it supplies the UK with what it needs in terms of R&D.

Alternatives to Structural Change

REC 12: APPOINTMENT OF DIRECTORS OF RATIONALISATION

NERC does not consider that public funds would be well spent in providing for two new Directors of Rationalisation and their teams. Opportunities for rationalisation should be addressed through existing senior management channels.

Even in the absence of change in organisational structures, existing Chief Executives and Directors of PSREs have remits to ensure that rationalisation opportunities are seized between their organisations, as well as within them.

As described above, NERC already has its own open-ended restructuring programme and opportunities for rationalisation between Councils are addressed by the Director General of Research Councils and the Councils' Chief Executives.

Supplementary Rationalisation Mechanisms

REC 13: ENHANCED CUSTOMER-SIDE CO-ORDINATION

NERC, in its role as a customer for environmental science, supports the need for enhanced customer-side co-ordination as an input to strategic planning. It also supports this need in its role as a contractor since much environmental research is multi-customer.

The Concordats being developed between Departments and Research Councils will further co-ordination mechanisms. Co-ordination of environmental research, survey and monitoring activities across Departments and Departments/Research Councils is also fostered by two Inter Agency Committees—on Marine Science

and Technology and on Global Environmental Change. These existing mechanisms have not been commented on in the report, yet they were established specifically to bring together the main players in Government research in their respective areas with a view to co-ordination and the development of collaboration wherever this was appropriate.

NERC experience is that multi-customer consortium funding tends to be subject to short-term variations in priorities within individual departments and often does not provide the stability of funding consistent with programme requirements. Greater and earlier customer-side co-ordination might help improve this situation.

REC 14: COMPETITION ASSESSMENTS

NERC has some reservations about this recommendation which would seem to weaken the recommendation elsewhere in the report for greater customer/contractor separation.

In the present climate of open competitive tendering it seems inappropriate for owner departments to require their PSREs to provide them with supply-side assessments and information on their potential competitors, unless specifically contracted to do so. The transfer of such intellectual property across the customer/contractor divide may impair the PSRE's opportunities in winning business from its owner department through open competitive tendering.

REC 15: POTENTIAL FOR SITE RATIONALISATION

NERC supports this recommendation, which could be extended to all capital investment

Examining the potential for rationalising sites have been a long-term objective of NERC. In the last 20 years, the operational sites of several institutes have been combined or transferred to gain operational efficiency and to reduce fixed costs. For example, the six BGS sites in London and two in Leeds were combined at a centralised facility developed near Nottingham, also shared with the NERC Isotope Geosciences Laboratory. When the Banchory Research Station was severely damaged by fire in 1991, a full cost benefit analysis was undertaken to determine whether to rebuild or to re-locate the work elsewhere, in particular at Aberdeen University, the decision to rebuild was based on this analysis.

Opportunities for site rationalisation will continue to be examined as they occur. However, such rationalisation is costly. For example it costs £30k to relocate a scientist and large redundancy and pension bills may be incurred. The cost benefits therefore need to be clear. The mutual benefits of the strong regional links that NERC institutes have with users (local industry, local government, planners etc) also need to be taken into account in site rationalisation.

REC: FORMATION OF SUPPLY-SIDE CONSORTIA

NERC fully supports this recommendation which, in its role as a customer, it is already pursuing actively

The NERC Community Research Projects (CRPs) are prime examples of such consortia. They are major strategic inter-disciplinary science initiatives in which scientists from universities, NERC institutes and other research establishments collaborate. Each CRP is hosted by one of the NERC laboratories or a leading university department and overseen by a Scientific Steering Group supported by a science co-ordinator from the host laboratory. Other customers often buy in to these consortia.

REC: PSRE "CLUBS"

NERC supports the development of PSRE clubs to foster sharing and rationalisation

As noted above, recent re-structuring within NERC has led to the development of two new groupings—the Centre of Coastal and Marine Sciences and the Centre for Ecology and Hydrology, bringing together NERC institutes in the marines and terrestrial/freshwater areas. Within these groupings, the scope for further sharing and rationalisation will be examined based both on the needs of the science and the perceived resource and user base. The Southampton Oceanography Centre is another recent example of the development of a club, in this case involving two NERC establishments (to transfer to the University) and several university departments.

Cross owner clubs are also a possibility. For example, a club of research vessel fleet operators might be formed to meet at least once per year for a UK programming exercise with the aim of making arrangements to share vessels where appropriate. This would permit the identification of any spare capacity and facilitate

a better UK input to European Discussions on vessel-sharing. NERC, as the owner of the largest fleet would be the appropriate agency to take the lead in such an initiative.

Other Specific Rationalisations

Rec 22: Proposed transfer of the Institute of Virology and Environmental Microbiology (IVEM)

NERC rejects this recommendation for IVEM to transfer out of NERC

Environmental microbiology is an increasingly important competent of research into processes in the geosphere and in various applied areas of research, for example into contaminant transport. NERC's new initiative on Ecological Dynamics and Genes (EDGE) illustrates the central importance of molecular biology in NERC's life science activity. IVEM is central to the application of new technologies that permit the study of micro-organisms in the field. To transfer the institute would seriously damage NERC's capability to direct and manage programmes in this developing area of environmental science.

Commercialisation of the Customer-Contractor Relationship

Rec 26: Customer Checklists

NERC welcomes the report's recognition that strategic or practical considerations may override external competition as the preferred method of sourcing R&D/S&T.

The Scrutiny team identified as a helpful approach the HSE criteria for intramural research (Annex P of the Report). Many of these criteria apply equally to the strategic research and national surveying and monitoring activities of the NERC institutes.

Rec 27: Open tendering for Research Council activities

NERC considers that this recommendation has merit in relation to directed programmes, although it has reservations with respect to the private sector.

NERC and its institutes outsource both scientific and service operations through a variety of mechanisms including open competitive tendering. All new NSS services since 1992 have, for example, been provided as a result of competitive testing; GRES and institutes of other Research Councils have participated in NERC CRPs; elements of the AUTOSUB CRP are sub-contracted to commercial organisations. A key issue in relation to open competition for elements of national survey or strategic research activities is that of Quality Assurance.

NERC would, however, be unhappy about opening up competition to private industry/commerce without assurance of (a) financial input to the total pot of money for grants (otherwise the public purse would be subsidising industry) and (b) openness of access to any data acquired. With regard to competition for grants from GRES and other institutes, NERC would want to ensure that the arrangement was fully reciprocal.

NERC's policy is to increase opportunities for competition between universities and its institutes for funds. This could include other Research Council institutes on a fully reciprocal basis.

Rec 28: Review of HEI costing basis

NERC welcomes this recommendation

Rec 29: Staff Exchanges and use of PSRE Expertise

NERC supports this recommendation in principle

NERC has supported staff exchanges and secondments between its own institutes and headquarters and between NERC (institutes and headquarters) and government departments. NERC also draws directly on the expertise of suppliers in PSRE and in universities (as well as user groups) in developing its S&T strategies.

However, in an open competitive tendering situation suppliers will need to be circumspect in the level of their dealings with customers. As already stated under the response to Recommendation 14, unless there are clear agreements on future partnerships, transfer of intellectual property between the customer and the contractor to assist the customer could impair the supplier's opportunities in winning the business if it is subsequently put out to competitive tender. NERC has a number of examples of proposals promoted by its institutes in good faith being subsequently used in such tendering exercises.

Rec 30: Collaboration and subcontracting by PSREs

NERC supports this recommendation in principle

As already indicated in response to other recommendations, NERC in its customer role has generally looked to support core long-term strategic activities in its research institutes, bringing in wider expertise as required through collaboration and joint ventures with both other public and private sector suppliers. NERC

institutes, as suppliers, have also collaborated/subcontracted with other suppliers for many activities both in the UK and overseas. The development of links with private industry for the commercialisation of technical developments is also a current objective.

Rec 32: Owner-customer separation

NERC supports this recommendation

The recent re-organisation within NERC has separated the customer and owner roles.

Rec 33: Accounting systems

NERC institutes already have, to a large extent, the accounting and other systems in place to allow programmes to be defined in terms of scientific value and resource costs.

Rec 34: Targets for Joint Ventures and maximisation of commercial revenue

NERC supports the principle of setting such targets in a proper basis which may, or may not, include a need for interdepartmental discussions. However, it is not necessarily persuaded of the value of publication of such targets.

Rec 35: Operational flexibilities

NERC institutes already have the flexible inherent in net running cost operation.

NERC

October 1994

Memorandum submitted by Horticulture Research International

MULTI-DEPARTMENTAL SCRUTINY OF PUBLIC SECTOR RESEARCH ESTABLISHMENTS

The Board of Directors of Horticulture Research International (HRI) has studied in detail the report and recommendations of the Scrutiny Team. We would like to draw the following points to the attention of the Select Committee.

1. SUPPLY-SIDE RATIONALISATION AND VALUE FOR MONEY

Extensive rationalisation and closure of science programmes and R&D sites preceded the establishment of HRI, following a MAFF Review of Horticultural Research in 1989. Further rationalisation is underway with the closure of HRI's Littlehampton site due to be complete in 1996, and it is clear that HRI's mission does not overlap with that of other PSREs. In addition, HRI has clearly-identified customers for all of its science programmes. Of HRI's income, 85 per cent comes from funding arrangements in which customers are directly commissioning or contracting specific research to meet their requirements, demonstrating that there is a clear market demand for HRI's scientific skills. The balance of funding is provided by BBSRC, who have already sought, in their own rationalisation programme (as AFRC) to ensure that there is no overlap in the work that they fund. We would therefore contend that further rationalisation of HRI would not be justified on grounds of scientific overlap.

Another clear objective of the Scrutiny Team was the development of mechanisms for achieving best value for money. This has been a key objective within HRI, and the Board of Directors has played an important role in streamlining the organisation to ensure economy, efficiency and effectiveness.

The HRI Board, with strong, commercially-orientated members will inevitably be a more effective influence in providing excellent low cost science and technology for horticulture than some heterogeneous sponsorship grouping well-removed from the industry it serves.

2. LINKS WITH INDUSTRY

In providing the R&D expertise for UK horticulture, HRI's science programmes are of central importance in generating information and products for an industry that is receptive to new technology and whose improved competitiveness will contribute very significantly to UK wealth creation. HRI's mission is clear and it has the strong support of the horticultural industry who actively fund R&D. Potential dilution of our present mission is a hazard that could arise given the very broad grouping of institutes within which the Scrutiny Team have placed HRI's future sponsorship. We believe that HRI can be more directly responsive to market needs as it is managed currently. HRI's potential incorporation into alternative sponsorship arrangements could diminish our ability to retain and develop further our contacts with the UK industry and, such changes would be likely to create unease and apathy within the industry. The support of the industry has been vital in the progress of horticultural R&D. Already, significant concerns on the Scrutiny Report have been expressed to us by leading members of the industry. They believe it would be a retrograde step if HRI

were to be absorbed into the research conglomerate proposed by the Scrutiny Team, particularly as the industry was closely involved in bringing about the establishment of HRI.

The horticultural industry would also need to understand how the changes proposed could improve the delivery of research. At present, BBSRC or University sponsorship would be perceived as moving away from the White Paper objective ("Realising Our Potential") which stresses the need for closer relationships between R&D establishments and a clearly-identified user community, such as the horticultural industry.

The horticultural industry requires and expects stability following the earlier rationalisations within horticultural research, some of which are still being completed. The sponsorship groupings proposed in the Scrutiny Team report reflect the team's views on convenience for future rationalisation rather than any real attempt to promote the links between the science base and industry.

3. UNIVERSITY AND BBSRC LINKS

We note that the Scrutiny Team report recommends that Government Departments should consider transferring PSREs to University ownership and that formal links should be established with universities. We welcome the latter recommendation. HRI already has a formal link with the University of Birmingham and has discussions underway with the University of Warwick: the breadth of HRI's science programmes make such links a sound scientific option, but with several universities rather than just one. University ownership is not favoured by HRI's Board, not least because the criteria by which University productivity and excellence are judged are quite different to the criteria by which HRI's performance is assessed. We would expect an alienation from industry in any shift within HRI's towards basic science and teaching and believe that the considerable advantages to be gained from close contact with universities can equally well be achieved by formal links that fall well short of ownership *per se*. Furthermore, the sheer size of HRI, coupled with the complexity and magnitude of the necessary financial arrangements, would preclude takeover by a single University. The supportive grower community that HRI services would be deeply hostile to fragmentation of HRI's operations.

Just as there are good scientific grounds for collaboration with relevant universities, HRI also collaborates with complementary science programmes at BBSRC institutes. This collaboration can be sustained without the need for common sponsorship by BBSRC. Indeed we believe that the organisational groupings proposed by the Scrutiny Team, in which HRI would be sponsored by BBSRC, would only be justified if there was real scientific overlap between HRI and BBSRC institutes. We contend that there is no such overlap and therefore that no sound case has been made for a change in sponsorship on these grounds.

Within the sponsorship grouping proposed, with its extra layers of management, we believe that HRI's clear mission would be blurred, the key influence of the HRI Board would be reduced and unnecessary change and uncertainty would be created both for the UK horticultural industry and HRI's staff. These would all contribute to HRI functioning less effectively than at present.

4. HRI'S IDENTITY AND KEY FUNCTION

In the four years since its establishment we believe that HRI as an entity has developed as an outstanding role model for the way in which science can be effectively managed across a wide range of research establishments and over a wide range of industries. In an ideal world, HRI should be left alone to get on with the job and to test its potential fully. Because it is providing the R&D technology for a sophisticated industry, we are strongly of the view that HRI needs to retain its identity and key functions. These key functions include:

- meeting the specific R&D needs of UK horticulture while operating in the international market-place
- a broad science base ranging from basic science of relevance to horticulture (eg supported by the Science Budget), to applied R&D (eg supported by industry)
- maintaining and strengthening the excellence of our science and technology programmes
- enhancing the existing strong links between individual research scientists and both industry and government customers
- ensuring that the results of R and D are effectively transferred to the end-user
- operating with a representative and commercially-aware Board of Directors.

MAFF has already successfully invested much time, effort and finance in ensuring that HRI has a focused remit and is running on efficient lines. We also recognise that, as an NDPB, HRI is already subject to a quinquennial review of its function (due in 1995) during which "Prior Options" will automatically be reconsidered. We acknowledge that such a review may mean that the "*status quo*" may not exist as a future option. However, within MAFF, key ministerial and policy customer objectives in horticulture continue to be coincident with those of HRI, ie in providing strategic R&D to improve industry competitiveness.

We contend that MAFF will continue to be the most logical sponsor for HRI's future development.

G Terry Pryce, Chairman

Memorandum submitted by the Save British Science Society (10.94)

Executive Summary

1. PRIVATISATION

1. The Public Sector Research Establishments (PSREs) form a vital part of the national resource in science and technology. The Government Research Establishments (GReS) have particular responsibilities to provide Government with authoritative advice on a wide range of scientific and technological issues of great importance. This advice must be unquestionably independent, and publicly perceived to be so.
2. The GReS can also play a much needed role in bridging the gap at the interface between the long-term research of the science base and its applications in industry, assisting in technology transfer and diffusion of knowledge, especially to small enterprises.
3. It is remarkable that this review by the Government's Efficiency Unit gives little or no thought to the kind of management structures which can best ensure the highest quality and effectiveness in the way these functions and responsibilities are carried out. Nor is there any attempt to learn from the ways other governments manage their equivalent resources. The only consideration appears to be the reduction of expenditure.
4. Serious reservations on the possible outcome of the Efficiency Unit Scrutiny have been expressed in our "Preliminary Comments" to the Committee (26 May 1994), where we also recorded our strong endorsement of the views of the Royal Society (16 March 1994). We are relieved to find the report adds only one new PSRE to the list for privatisation. But we remain deeply concerned about many other aspects of the report.
5. In particular, the continuing uncertainty over the future status of many PSREs is intolerable and a cause of damaging loss of morale. **A decision on which shall remain in the public sector or be prepared for privatisation must be made without delay.**

2. THE MANAGEMENT OF PSREs

6. Twenty years of experience has demonstrated the failure of the Rothschild "customer-contractor principle" in the GRe sector, especially regarding the support of long and medium term programmes of "core" research. Application of an extension of this "principle" to a "commercialisation" of Government funding in which an enlarged community of GReS, research council laboratories, universities, research associations, and industry will compete for a share of the already grossly inadequate research council budget is misconceived and capable of causing lasting damage to the whole science and engineering research base.
 - (a) The customer-contractor dichotomy will frequently ensure that those best able to judge competence and "value for money", especially in the case of long and medium term research, are excluded from doing so. There may be a place for this mechanism in the case of well defined applications—specific research and development; but in the PSRE and science base context other considerations often apply making collaboration preferable to competition.
 - (b) Attempts to form a theoretical "level playing field" to allow "fair competition" between institutions and organisations with quite different missions are inappropriate and likely to create damaging distortions: a further shift to short term projects; covert subsidy to industry; instability in funding for long term academic research and further weakening of the link between teaching and research; the eventual demise of the "dual support" mechanism and an end to the possibility of local initiatives in research.
 - (c) The considerable transaction costs—ignored by the report—will reduce the funds available for research.
 - (d) This additional competition for scarce funds (survival) will raise new barriers to the unhindered exchange of information within the science base and with the international research network, and that the interface between the science base and industry—where every effort should be made to facilitate transfer.

3. OVERLAP

7. In the consideration of possible mergers of PSREs with apparently overlapping missions scientific effectiveness should be dominant. The advance of knowledge often benefits from the existence of independent lines of research, approaching from different directions.

4. "PRIVATISATION" BY UNIVERSITIES

8. There are good reasons of symbiosis and synergy for the closer association of universities and appropriate PSREs—especially those involved in long term, basic research. But universities should beware of taking over responsibility for institutions which would not be considered viable by the private sector because of their dependence on unreliable Government funding.

5. PRACTICE IN OTHER COUNTRIES

9. A brief scan of practice in a few other countries shows an emphasis on strong incentives for collaboration, especially between national research laboratories and industry, in which governments provide substantial matching funds. No equivalent of "privatisation" has been found.

6. A MANAGEMENT SOLUTION

10. In contrast with the Efficiency Unit's unquestioning faith in the applicability of "competitive market" concepts to the management and funding of the PSREs and other elements of the science and engineering research base, we emphasise the need for strong incentives for collaboration and the unhindered exchange of information, especially across the interface with industry.

11. It is especially important to stimulate and assist collaboration with industry in well-focused applications-specific research and development, an area where GREs have a particular competence and could have a Fraunhofer-like role.

12. There is a need to establish a management structure which can ensure that:

- (a) there is the necessary stability in funding for efficient and effective performance of long term basic and strategic research;
- (b) there is a degree of effective co-ordination in the research programmes of the GREs;
- (c) the objectives and quality of research and development programmes are regularly subject to external monitoring and peer review;
- (d) the medium to long term research programmes of the GREs fit well into the overall pattern of research carried out in the research councils and universities; ie, that they form an effective part of the science and engineering research base;
- (e) application-specific research and technological development is well focused though close interaction with end-users—in Departments, industry, or elsewhere;
- (f) there is the means of carrying through the "rationalisation" of establishments which is necessary from time to time.

13. We propose that all GREs are brought into the control of a much strengthened OST, together with transfer of all the associated operating funds including the base, or "core", programmes of research. The Ministry of Defence (MoD) research establishments and those of the Department of Trade and Industry (DTI) should be included in the transfer.

14. Within the OST, effective collaborative links could be established between the GREs and the rest of the research base, including the universities. Coherence in the research programmes could be ensured and an extension of mechanisms already in place would provide programme review. Building on the experience of the CASE, LINK and other schemes, an expanded and better funded set of incentives for collaborative applied research with industry involving the universities and PSREs could be established. Rationalisations could be carried out without the present cross-Department difficulties, following the example set in recent years by the AFRC. Departments would remain responsible for commissioning, and funding, applied research specific to their needs from the GREs managed by the OST, or elsewhere.

15. The OST would thus carry the major responsibilities in Government for forming science and technology policy—drawing on external advice (which should be published)—and for funding the medium to long-term basic and strategic research carried out by the GREs and the research councils. It should then have a role more like that of the Science and Technology Ministries in France and Germany, and so would need a strong, well supported team of high quality staff with experience of research and its management at senior levels.

16. A precondition for restoring the health and vigour of the science and engineering base, including the GREs with their important role in medium term research and technology transfer, is the reversal of the steep decline of Government funding of civil science. From now on, all sums realised by reductions in expenditure on defence R&D should be transferred to the OST for the support of civil science.

1. PRIVATISATION.

17. Public Sector Research Establishments (PSREs) form a vital part of the national resource in science and engineering. Those with links to specific Departments of government (Government Research Establishments (GREs) are required to provide advice and perform research in support of their Department in carrying out its responsibilities. To underpin this function effectively and to attract research scientists and engineers of high calibre into their service, the GREs must have a core programme of strategic research in their field; this will allow efficient communication and transfer of information between GREs and other sectors of the science base, provide a broad base of knowledge and experience available to cope with unexpected situations (eg. BSE), and ensure that the advice given carries the necessary, independent, authority.

18. Lacking such advice, the Government should not believe itself able to act as an informed, competent customer when it enters the market place to seek related services from private industry: *caveat emptor*.

19. In a world of rapid change and increasing technical complexity, it is essential for Government to have access to up-to-date advice based on direct knowledge and experience which is **unquestionably disinterested and publicly perceived to be so**. A prime responsibility of Government, relying upon the GREs, is the authorisation and monitoring of standards: in metrology, the environment and effects of pollution, health and safety regulations, forensic technology, etc; here the independence of the advice carrying the authority of Government is crucial, especially in the context of international agreements.

20. Within the overall framework of the national science and engineering research base, the PSREs can, and do, help to bridge the gap between the long-term research of the academic sector and the more short-term application-oriented needs of industry assisting technology transfer and diffusion. This "medium-term" strategic and applied research is an area of particular weakness in the national portfolio.

21. Effectively used, the GREs can be an important route for technology transfer, especially for small enterprises with little or no capacity for their own research and technical development—often unable to be effective "customers" for research. ADAS has achieved great success in the agricultural sector, helping to make British farmers among the most efficient in Europe; a model that might be copied to the benefit of small enterprises in other areas of the private sector¹.

22. In any review of the management structures and funding of PSREs, the effective performance of these responsibilities and functions should have been the paramount consideration.

23. The report is also remarkable for the absence of any attempt to look outside Britain, to see how the governments of other nations meet the same responsibilities and use the equivalent resources for the public benefit.

24. We have expressed many of our reservations on the possible outcome of the Efficiency Unit's scrutiny of the PSREs in our "Preliminary Comments" to the Committee (26th May 1994), where we also recorded our strong endorsement of the Royal Society's views (16th March 1994). It is therefore some relief to find that the report does not recommend the wholesale "early privatisation" that appeared to be the Government's wish. Indeed, the fact that a clear case is made for only one new privatisation (ADAS) out of the 48 PSREs selected and open for discussion must surely cast great doubt on the safety of the decision already made by the Departments concerned to privatise four DTI laboratories and one in DT.

25. But the abstention from further privatisations at this stage does not leave us fully reassured. Many causes for concern remain; grievous and lasting harm may yet be inflicted upon an important national resource. As the report makes clear, the **primary incentive for privatisation remains: it is the imperative of continuing reductions in public expenditure on civil R&D**. Transfer to the private sector would make it easier to reduce Government commitments, while "market forces" could be left haphazardly to achieve the cross-Departmental rationalisations that the Government itself appears to despair of managing.

26. Of the cases open to review, early privatisation (ie. within 3 years) was recommended for only one although (para. 3.17) "*over the longer term further candidates could well be identified*". This prompts the question: in which cases was the difficulty that "*the mix of activities includes work which would only with difficulty be privatisable*", or that "*the organisation is not in shape for privatisation*." In the latter cases steps may be expected, such as further reducing government support, cutting staff and increasing dependence on non-government contract work, to put the unit "in shape" for later privatisation.

27. If there is one recommendation of the report we can **strongly endorse** it is that "*clear decisions should ... be taken without delay on which PSREs are to remain, for the foreseeable future, in the public sector* (7.16). The imperative "**without delay**" is our addition; great damage to the morale and motivation of the staff in PSREs has already been done, and this intolerable uncertainty must quickly be brought to an end.

2. MANAGEMENT OF PSREs

28. The main body of the report deals with proposals for the management of those establishments remaining within the public sector, and their relationships with other Government funded bodies such as the research councils and universities, and with industry. Here our concerns stem mainly from what the report calls "*a key underlying theme of our scrutiny, the 'commercialisation' of the public sector customer-contractor relationship*." Sir Peter Levene told the House of Commons Committee on Science and Technology (13th July 1994) "*The Rothschild customer-contractor principle is paramount*."

29. Starting as we do from the need to ensure maximum effectiveness and quality in the way the PSREs perform their tasks, our view of what should be "paramount" is rather different. Among others, two vital factors are: stability in funding for core, long-term research; and unhindered exchange (as free as possible of restraint due to competitive funding pressures) of information and technological "known how" with all other

¹ More than half those in employment work for companies with less than 100 employees.

parts (including basis research in industry) of the national, and international, science and engineering research-base network.

2.1 *The Rothschild Failure.*

30. In the PSRE context the “customer–contractor principle” relies on the existence of intelligent, well informed and far-sighted, “customers”. These have been notably absent among Government Departments, and increasingly so in recent years. The Rothschild prescription that research establishments should receive an additional 10 per cent of the value of their Departmental contracts to fund their engagement “*in research which is not directly concerned with the programmes commissioned by their customers*” was disregarded from the start, over twenty years ago.²

31. The report says (para 7.9) “*PSREs have highlighted to us their concern that the day-to-day preoccupations of customers may lead to short-termism in the definition of requirements and the need for capabilities. We recommend that...owners and customers should work closely together so that a long-term view is taken of departmental needs and the part to be played in meeting them by PSREs.*” Evidently, the authors of the report are unaware of the lessons of twenty years of history: it doesn’t work.

32. The Efficiency Unit has discovered the MAFF’s arrangement with BBSRC to limit the extent to which funding can be varied, and recommends it be brought to an end. Rather than be terminated, this sensible mechanism for smoothing out significant falls in budget with damaging consequences for efficiency should be extended to other Department–Research Establishment relationships.

33. The situation in many laboratories is deteriorating as increasing pressure to replace government funding by private sector contracts inevitably drives research effort towards short-term problem-solving activity at the expense of longer-term core research. The principal assets of any laboratory reside in the staff, in their knowledge, breadth of experience, and the effectiveness of their working relationships. But instability in the funding of research programmes demotivates, and the continuous reduction of budgets results in the loss of valuable, often the best, staff and the break up of strong and productive interdisciplinary teams.

2.2 *“Commercialisation”.*

34. The meaning of this is spelt out in paras. 7.2 and 7.3 of the report: “*We recommend that Departments...ensure that external competition is the preferred method of sourcing R&D/S&T work... (and)...that research councils declare themselves open to applications from all competent suppliers, including GReS, institutes of other research councils, independent research associations, and the commercial as well as the academic private sector (ie universities.)*”

35. Thus, all the different components of the national science base are to compete between themselves and with industry for a share of already grossly inadequate government funds for research. The research councils, already too frequently having to refuse funds for research rated outstanding, in the universities and their own laboratories, are now to be obliged to find the funds to support “core” research which the other Departments will not pay for in their GReS, and to provide the assistance to industry in the development and introduction of new technologies which the DTI has decided to shirk.³

36. As well as the lack of money, there are a number other potentially damaging consequences.

2.2.1 *The “Customer” Conundrum.*

37. Who will, can, act as the “customer”? Who will decide which “bid to accept”? The only truly well informed customer for research is one who is doing research or—if it is applied research—is close to, or engaged in, the developments that apply the research. But the “customer–contractor” dichotomy will frequently ensure that those best able to judge competence and “value for money” are excluded from doing so. “*A scientist soon loses his skills if he does not draw on them*” said Rothschild, when advocating a flow of scientists from laboratories to the Department HQ—where they could act as customers—and back again by secondment. But this has not proved a sound procedure in practice and to ask more of it seems unreal.

38. In the case of well defined application—specific research or development the customer–contractor mechanism can have a place. But in the PSRE science–base context other considerations often apply and collaboration—also effective in providing the necessary focus—may be preferred as being more widely beneficial.

²In 1971 Rothschild’s somewhat arbitrary 10 per cent for what he regarded as “non-applied” research was worth £54 million; this was expenditure by Government Departments and did not include money spent by the research councils and universities. The equivalent sum today (using the GDP deflator) would be £400 million; according to the OST’s “1994 Forward Look”, Government Departments spent £61 million on “non-applied” research in 1992/93, less than two per cent of their total R&D spend.

³In the last few years, the DTI has cut by over £40 million its annual contribution to programmes (including LINK) jointly funded with the research councils.

2.2.2 The "Level playing field".

39. As a condition for a "fair" market this is a theoretical concept rarely met in the real world. In this context of competition between bodies with quite different "missions" it is not applicable and misconceived.

- (a) The attempt to compete on equal terms with industry on short-term problems is bound to lead to further fragmentation and loss of staff with serious impact on the ability of GRES to meet their long-term responsibilities to Departments.
- (b) Private industry, adept at finding ways to tilt playing fields in its favour, could well decide to bid to do research at less than "Full Economic Cost" in order to gain some subsidy on work they wished to pursue anyway.
- (c) Research funds in universities provide the triple benefit of expanding the knowledge base, training PhD students in research; and enlivening undergraduate teaching teaching; instability in funding for long-term academic research is already a desperate problem, and the attempt to compete with organisations whose staff can be devoted full time to the tasks in hand would have a damaging impact on teaching, further weakening the link between teaching and research.
- (d) Through the "Dual Support" mechanism universities receive money for research from the Funding Councils (FCs) which, in principle, should provide a "well founded laboratory" and a margin of funds available to take original initiatives in research independently of the programmes and committees of the research councils. The OST's own White Paper places a large part of the burden of ensuring the survival of "blue skies" research in universities on the FC leg of Dual Support. But this will be regarded as an "unfair subsidy", not controlled by the "market" nor regulated by the research councils; it is already under attack, nearly ineffective, and likely to be ended under "commercialisation"⁴.

2.2.3 Transaction Costs

40. No attempt has been made to cost any of the changes proposed by the Efficiency Unit, it is therefore impossible to judge the assertion that the proposals will satisfy the touchstones of greater "efficiency" or "better value for money". In particular the large **transaction costs** associated with this wide "commercialisation" of the science base are conveniently assumed to be zero. This is because the price of the increase in bureaucracy, already out of control, and the salaries of all the new accountants and administrators, will appear as a fresh burden on the existing science budget: **less science for the same money**.

2.2.4 Unhindered Information Flow

41. The intellectual stimulus of the competition to be first with a major discovery or development is an effective spur to the progress of science, but it is finely balanced by the need of all researchers to share in the exchange of information—an equally essential element. The unhindered flow of information, data, and technical "know-how"—tacit as well as published, conveyed over coffee at meetings and conferences, by telephone, fax and e-mail—is the intellectual oxygen firing the advance of knowledge and its application.

42. Competitive pressures for research council money (survival) are very high, and the increasing dependence of GRES and universities on industrial funding is already putting embargoes on information flow. The increased and widened scope of the competition for funds proposed under "commercialisation" will inevitable raise new and higher barriers against actual—and newly perceived—competitors within the science-base, between GRES, and at the interface with industry; places where every effort should be made to stimulate the unhindered flow of information.

43. If the situation were to degenerate to the stage where British scientists would feel difficulty in taking part in the international information exchange network, the long-term consequences would be disastrous for British science.

3. DUPLICATION AND OVERLAP

44. The efficiency unit found few instances of actual duplication of effort, but "overlap"—defined as "parallel activity on different 'targets' or for different purposes"—was a frequent occurrence often arising because establishments had partially overlapping missions.

45. It is possible that further "rationalisation" of the rather large number of GRES may be justified, but this should be approached with caution and with scientific effectiveness the dominant criterion rather than simplistic considerations of short term "savings". The paths by which knowledge is advanced cannot always

⁴Dual Support can also help seed collaborations with industry and small companies. In this connection we strongly endorse views recently expressed by the House of Commons Committee on Science and Technology: "Universities should not be compelled to see every interaction with industry as a source of immediate profit. While informal relationships between industry and academia may lead to difficulties in strict accounting terms, they serve to strengthen the country's industrial and academic base. Moreover, such links may lead on to more formal contracts." The Routes through which the Science Base is Translated into Innovative and Competitive Technology", April 1994, para. 112.

(or even often) be foreseen, and there is advantage to having independent approaches to a question from more than one direction. Also laboratories apparently working in the same field may have quite different mission responsibilities.

4. "PRIVATISATION" BY UNIVERSITIES

46. The Treasury deems universities to lie in the "private sector". A PSRE transferred to the ownership of a university can thus be said to have been "privatised".

47. There are many good reasons, of symbiosis and synergy, for a closer association in the structure and staffing of universities and appropriate PSREs, in particular those with a programme emphasising long-term, basic research. Among others, we have argued that too many PSREs were set up on green-field sites instead of being linked—as in countries like the USA, Germany and France—with universities.

48. But there must be a clear financial commitment by Government to transfer, and maintain, the costs of operating the ex-PSRE. "Early privatisation" may have been ruled out because the unit was not considered commercially viable without a large continuing input of government money; if private industry would be unwilling to take the risk of losing those funds, then the more so should universities beware.

5. PRACTICE IN OTHER COUNTRIES

49. If the Efficiency Unit had looked at successful practice in other countries it might have learned useful lessons on how not to throw the baby out with the bath water. This is not the place for the review which should have been done by the OPSS Unit, but here are a few illustrations:

- **USA** Building on initiatives taken under earlier (Reagan and Bush) Administrations, the Federal Government is seeking to forge closer collaborative links between industry and well funded (and not privatised) federal laboratories, and actively supporting the manufacturing base. Among the elements of this policy is the rapidly expanding Advanced Technology Programme (ATP)—contrast the recent termination by the DTI of the UK equivalent. Another of many examples is the scheme for Cooperative Research and Development Agreements (CRADAs) run by the Department of Energy: there are 1500 of these bringing National Laboratories, industry and universities into collaboration. The National Institute of Standards and Technology (NIST), a close equivalent of the NPL has been trusted with a major role in the oversight and implementation of these programmes. Jack Gibbons, Director of the Office of Science and Technology Policy (OSTP), has said "*this Administration believes in industrial policy . . . in terms of nurturing new sectors as was successfully achieved for agriculture, electronics and aerospace in the past*". The US chip manufacturing industry has regained world market leadership for the first time since 1985 with the help of Sematech, the government-backed semiconductor industry research consortium; now Sematech has announced it will no longer need to take the Government's 50 per cent matching funds and can stand on its own feet.
- **Germany** The example of the Fraunhofer Institutes is well known. They operate by a collaborative sharing of costs between public and private sectors, and have been particularly helpful to small enterprises.
- **Japan** Japan has a strong network of national laboratories doing research in a broad spectrum of science and technology. According to recent reports from the British Embassy in Tokyo⁵ the government has played "*a crucial role*" in the introduction of new biotechnologies to Japan and provided 30 per cent of the total funding of biotechnology research in 1993. Collaborative projects—Involving national laboratories, industry and universities—are encouraged and have brought new companies to this sector, helping Japanese industry to catch up with the rest of the world and in some areas take the lead.

6. A MANAGEMENT SOLUTION

50. A review of management and ownership structures for organisations forming the back-bone of the national science and engineering research base which fails first to consider and define the purposes of the PSREs and the conditions most favourable to the delivery of a high quality product must be flawed from the start, especially when the premises on which it is based have never been exposed to the test of informed debate.

51. There is a need to establish a management structure which can ensure that:

- (a) there is the necessary stability in funding for efficient and effective performance of long-term basic and strategic research;
- (b) there is a degree of effective coordination in the research programmes of the GREs;
- (c) the objectives and quality of research and development programmes are regularly subject to external monitoring (eg via Boards of Visitors) and peer review;

⁵ 23rd August 1994, OTIS: 94/16824P.

- (d) the medium to long-term research programmes of the GREs fit well into the overall pattern of research carried out in the research councils and universities; that is they form an effective part of the science and engineering research base;
- (e) application-specific research and technological development is well focused through close interaction with end-users—in Departments, industry, or elsewhere;
- (f) there is the means of carrying through the “rationalisation” of establishments which is necessary from time to time.

3.1 *Proposal*

52. “... whatever organisation is ultimately adopted to manage basic and strategic research it should be one that unifies rather than fragments scientific activity ...”. The ‘Dainton Report’, 1971.

53. “*The Office of Science and Technology, alone among Government Departments, is a ‘supplier’ of research rather than a ‘customer’ for research. It is, therefore, uniquely placed to hold responsibility for Government research establishments across all fields.*” The Royal Society (Statement on 16th March 1994).

54. We propose that all GREs are brought into the control of a much strengthened OST, together with transfer of all the associated operating funds including the base, or “core”, programmes of research. The Ministry of Defence research establishments and those of the DTI should be included in the transfer.

55. Within the OST, effective collaborative links could be established between the GREs and the rest of the research base, including the universities. Coherence in the research programmes would be ensured and an extension of mechanisms already in place would provide programme review. Building on the experience of the CASE, LINK and other schemes, an expanded and better funded set of incentives for collaborative applied research with industry involving the universities and PSREs could be established. Rationalisations could be carried out without the present cross-Departmental difficulties, following the example set in recent years by the AFRC. Departments would remain responsible for commissioning, and funding, applied research specific to their needs from the GREs managed by the OST, or elsewhere.

56. The OST would thus carry the major responsibilities in Government for forming science and technology policy—drawing on external advice (which should be published)—and for funding the medium to long-term basic and strategic research carried out by the GREs and the research councils. It would then have a role more like that of the Science and Technology Ministries in France and Germany, and so would need a strong, well supported, team of high quality staff with experience of research and its management at senior levels⁶.

57. A precondition of restoring the health and vigour of the science and engineering base, including the GREs with their important role in medium-term research and technology transfer, is the reversal of the steep decline of Government funding of civil science. From now on, **all sums realised by reductions in expenditure on defence R&D should be transferred to the OST for the support of civil science.**

Memorandum submitted by the Construction Industry Council (7 October 1994)

EXECUTIVE SUMMARY

The main points raised in the evidence of the Construction Industry Council are:

- There is an overwhelming need in the construction industry for an independent, impartial and authoritative National Centre for research and related activities.
- Two key roles for such a Centre would be to provide a facility whereby research work with a long timescale can be undertaken, and to support the Government’s regulatory responsibilities.
- More specifically the Centre would have UK representational responsibilities, embark on work which is in the general public interest, undertake commissions for research/consultancy work, provide an advisory and public information service, and have various international responsibilities.
- The Centre would be directed by industry, academia and Government.
- Initially the Centre would receive most of its funds from the public sector, but with the introduction of an industry-wide research levy this could change.
- Commercially driven privatisation, in whole or part, of the existing BRE, or its transfer to academia would not provide the kind of organisation industry and Government needs.
- The existing BRE provides the basis from which such a National Centre could evolve in a way that strengthens the existing research infrastructure in the construction industry.

⁶In 1971 the Chief Scientific Adviser (Lord Zuckerman) had a team of eight: four physicists, two mathematicians, one engineer and one economist; the OST is weak by comparison.

The evidence of the CIC is expanded in the accompanying main report and its representatives would be very pleased to elaborate on specific points and proposals by giving oral evidence to the Committee.

MAIN REPORT

INTRODUCTION

The Construction Industry Council is the representative forum for all of the professional bodies in the construction industry, collectively representing over 330,000 individual professionals and over 1,000 consulting firms. It was formed in 1988 and its principal objectives are to promote improved value for clients and to encourage unity in the construction industry to emphasise its significance to the nation. A full list of members is attached.

The Council welcomes the opportunity to submit evidence to the Committee on an issue which is of considerable interest and vital importance to its members and to the construction industry as a whole. The industry plays a key part in the country's economy accounting for some 10 per cent of Gross Domestic Product. However, it is an extremely fragmented industry with a wide diversity of clients and an equally wide range of firms and companies supplying their needs.

CIC's particular interest is on the future of the Building Research Establishment (BRE) and the references in the Scrutiny Report as to how this might be developed. Aspects of the Scrutiny Report which are particularly relevant to this include the recommendations that the Department of the Environment (DoE) should review the case for moving elements of the BRE into the private sector (paragraph 3.8), and that there should be an examination of the potential for transferring Public Sector Research Establishments to universities (paragraph 3.11). In reviewing these and other issues the CIC has tried to stand back from present arrangements and identify what kind of central research facility (if any) is needed to support the industry.

It has long been recognised that much of the research needed in construction is for the general good of the industry and its clients. Investment in work of this nature cannot yield a direct return to the investor. It therefore has to be funded by collective mechanisms such as taxes, levies, subscriptions or voluntary donations.

A NATIONAL FOCUS FOR RESEARCH IN THE INDUSTRY

CIC believes very strongly that the industry needs a multi-disciplinary National Centre for Building Research that is independent and authoritative. Such a Centre is needed to enable research work with a long timescale to continue to be undertaken and appropriate continuity and long term memory to be maintained. It is vital for the Centre to establish a reputation for excellence that ensures it attracts high quality staff and thereby attains a widely recognised international standing which would be to the considerable advantage of the UK. The Centre is also needed to underpin the responsibilities of Government for regulatory matters in the industry in the interests of public health and safety, and the increasingly important environment and energy-efficiency related issues. These latter issues need to be constantly re-evaluated as technologies change and new materials emerge and the Centre's work would need to encompass this. To meet this wide range of objectives the Centre needs to be of a size that gives it an effective critical mass.

More specifically such a Centre should focus on:

- (i) Projects commissioned by Government in support of its regulatory and statutory responsibilities.
- (ii) Work of a more general public and industry interest. This would include projects of a long term character which, although often with direct relevance to individual companies, requires sustained support over a long period and is therefore impractical for them to undertake themselves.
- (iii) Research and representational activities as a national voice for industry/Government in relation, for example, to the development of Codes and Standards within the European Union.
- (iv) Commissioned private research/consultancy work for industry either for specific organisations or through some form of club network.
- (v) An Advisory Service for industry and its clients to stimulate adoption of new methods with the authoritative approval of the Centre.
- (vi) A public information service on issues relating to building/construction technology and management.
- (vii) An international role in support of UK industry; obtaining overseas contracts in its own right in order to benefit UK trade in services; providing links with the international research community and acting as a conduit for international technology.

Management of such a Centre would need to reflect its close relationship with the industry and its clients, Higher Education Institutions, as well as with Government. To achieve this, all these interests should come together to form a Council to guide the operation of the National Centre.

In the immediate future, and in addition to Government project work, there is little alternative than to provide public funding for a number of the specific activities listed above—notably work related to general public and industry interest (ii), the representational activities (iii), the advisory service (iv), and the public

information service (v). However, the CIC has made proposals* for an industry wide levy to fund research and if this is implemented we see the opportunity for the National Centre to bid for a share of the money raised by this levy to fund these particular activities/services. Voluntary or subscription funding has been shown not to yield enough money in the very price competitive environment of the industry. The levy, on the other hand, would provide continuing and relatively stable funding which would underpin the industry's "ownership" of the National Centre.

The establishment of a National Centre

The CIC believes that the current BRE provides the basis from which such a National Centre can evolve. An important first step is the establishment of an effective Council with representation as outlined above. Coupled with subsequent support funding from an industry-wide levy, this would transform the activities of the Centre from the Public Sector Research Establishment status of the existing BRE, to an independent National Centre run by industry, supported largely by industry funds, but also providing the level of authoritative support that Government needs.

Is Privatisation a viable way forward?

CIC believes that the range of services required of a National Centre could not be provided by a commercially driven, privatised establishment, either newly established or by privatisation of the existing BRE. A wholly privatised research establishment might not be able or willing to direct its priorities in the interests of the industry as a whole, and there would be no assurance that a capacity to undertake general public interest research of a long term nature would be retained. Government could also find that its own requirements cannot be met because of the unavailability of suitable staff, or more pressing priorities for the organisation.

We are also opposed to the suggestion that it may be possible to create a privatisable entity by removing the less readily privatisable activities within the BRE. The profile of the National Centre will depend critically on creating a stimulating environment which attracts a range of different disciplines all working together, essentially on a single campus, on a range of issues. Its international standing as a perceived Centre of Excellence would be diminished if its successful initiatives were continually hived off into the private sector. It would not be able to attract the right calibre of staff, and the overheads or publicly funded research would increase. Modern construction industry research depends on collaborative input from many different specialists, and the strength of the Centre will be much improved by a cohesive grouping of activities.

BRE has a valuable national asset in the information it holds. It is essential in whatever arrangements are made, that this is held "in trust" for the public benefit. Access to similar public interest information is more difficult with some of the privatised entities, such as the public utilities. The independence of the Centre would be its most valuable asset and the model for the appropriate legal entity could be found in the existing research associations or the Chartered status of the British Standards Institution.

The scope for mergers with or transfers to university departments

We see the role of the National Centre as different from and complementary to, that of construction departments at universities which have a different culture. Research at universities, apart from its links to teaching, does, and should continue to, focus on fundamental issues, albeit those driving towards wealth creation, which have little immediate prospect of application. The National Centre would not compete with universities, but would be pro-active in helping universities to provide a stronger base for their research activities, so that with the assistance and support of industry, appropriate research findings could be applied in a way that helps industry improve its performance.

The value of the National Centre would therefore be its independence from any one university, and its focus on promoting the application of fundamental research. In many ways the Centre would act both as a go-between and facilitator, bringing together industry and academia, and creating a climate and an opportunity for improved coordination, development and dissemination of construction related research. There could also be considerable scope for involving the Centre's resources in collaborative training activities, and for staff exchanges between sectors.

Conclusion

The issues raised by the Efficiency Unit's Scrutiny of Public Sector Research Establishments has helped the CIC to develop its own ideas as to the kind of national research facility that will most benefit the industry. Such a facility is vital to the long term development of an efficient construction industry. We do not see commercial privatisation (in whole or in part) or links with a particular university as providing the solution, but rather the evolution of the existing BRE into a National Centre controlled jointly by industry, academia and Government, and, in due course, largely funded by industry through a levy.

*Private Funding for Construction Innovation and Research: Options for a National Institute'. A Discussion Paper, prepared by a Working Party of the CIC Research and Development Committee. January 1994.

The CIC would very much like to be invited to give oral evidence to the Committee in order to expand on these ideas further.

7th October 1994.

CIC MEMBERSHIP AT 1 OCTOBER 1994

ASI	Architects and Surveyors Institute
ABE	Association of Building Engineers
ACA	Association of Consultant Architects
ACE	Association of Consulting Engineers
BIET	Board of Incorporated Engineers and Technicians (ICE)
BFRC	British Flat Roofing Council
BIAT	British Institute of Architectural Technologists
BSRIA	Building Services Research and Information Association
CIOB	Chartered Institute of Building
CIBSE	Chartered Institution of Building Services Engineers
CSD	Chartered Society of Designers
CIRIA	Construction Industry Research and Information Association
CQSA	Consultant Quantity Surveyors Association
GF	Ground Forum
IBC	Institute of Building Control
ICM	Institute of Construction Management
ICWGB	Institute of Clerks of Works of Great Britain
IHIE	Institute of Highway Incorporated Engineers
IMBM	Institute of Maintenance and Building Management
IoP	Institute of Plumbing
ICE	Institution of Civil Engineers
ICES	Institution of Civil Engineering Surveyors
IStructE	Institution of Structural Engineers
LI	Landscape Institute
NHBC	National House-Building Council
RIBA	Royal Institute of British Architects
RICS	Royal Institution of Chartered Surveyors
RTPI	Royal Town Planning Institute
SST	Society of Surveying Technicians

ASSOCIATE MEMBERSHIP

AHS	Association of Heads of Surveying
BCT	Building Centre Trust
BRE	Building Research Establishment
CS	Concrete Society
CICA	Construction Industry Computing Association
CITB (NI)	Construction Industry Training Board (Northern Ireland)
DSA	District Surveyors Association
EA	Electricity Association
FoB	Faculty of Building
ICT	Institute of Concrete Technology
RIAS	Royal Incorporation of Architects in Scotland
SCHOSA	Standing Conference of Heads of Schools of Architecture

Memorandum submitted by the Chartered Institution of Building Services Engineers (21 October 1994)

1. This Institution considers that the case for conducting the Efficiency Unit's review has been justified. We understand that this is to support the White Paper on the Strategy for Science, Engineering and Technology (Cm 2250) by promoting a strong science base.
2. We are satisfied with the basis of choice of the 53 Public Sector Research Establishments (PSRE's).
3. The study appears to have been conducted in a satisfactory manner. The remit, terms of reference, coverage and methodology are all clearly stated. The structure and terminology of the report allow for easy reading and comprehension.
4. The Institution's submission is primarily concerned with the Building Research Establishment (BRE). BRE's primary role is to provide technical support for Government policies and responsibilities (Building Regulations, environmental policies, housing, European negotiations etc). With the new DoE sponsorship policy, more of BRE's work will be orientated towards issues of quality and productivity. The Establishment acts as a national reference point for technical issues in building. The information derived from Government programmes is made available to industry through publications, the Advisory Service and very importantly through input to public domain standards, codes and professional guides. This is important to industry not

only in providing common benchmarks for designs but also the industry's client base in terms of providing a robust not sectoral framework.

5. Regarding the proposals of the report, we feel that:—

- (a) They will not necessarily aid efficiency. In the case of the Building Research Establishment, for example, simply removing the less profitable activities in order to create a more privatisable entity (para 3.6) will not contribute one iota to the efficiency or the effectiveness of the way in which BRE conducts its business.
- (b) Neither will the changes proposed in para 3.6 strengthen the effective provision of scientific expertise and advice. We feel that the reverse may apply, namely that the effect of privatisation of parts of BRE's operations will lead to a two-tier structure with perhaps the private sector attracting a small but high-calibre section of expertise with the remainder of BRE's staff either leaving altogether or remaining in what will be essentially a low-cost, low-esteem public sector environment.
- (c) It is hard to see how the differentiation and dilution of the construction industry's research expertise can contribute to wealth creation and the quality of life. We feel that this will be an irreversible step for the UK construction industry which will be diminished by this loss. However, the vacuum created may be quickly filled in the short term by national competitors from the EC buying into the UK market.

6. The report's proposals for the BRE may make the statutory duties of the establishment more expensive since, with a mix of public and commercial activities, there is scope for economies. With the loss of the commercial activities to the private sector, this latent benefit will be no longer available.

7. We do not believe that the report's proposals for privatisation have been fully thought through. In particular, the report has failed to provide any indicators of performance by which the efficiency and the effectiveness of the proposed privatisations can be judged. In the case of construction industry research, there are also many hidden disbenefits associated with privatisation, for example the possible loss of valuable sections of the research market to overseas competitors.

8. We support the proposal that PSRE's should develop links with universities where they do not exist at present but we consider that the possibility of transferring the BRE to a university is just not workable, given the need to co-ordinate and control the construction industry's research programme in the private and public interest. The needs of the industry and those of a host university may only fortuitously coincide. We have no comment on proposals 10 and 38 relating to the alternative organisational models and the new appointments of Directors and Rationalisation respectively.

9. The benefits of cross-departmental and/or Department/Research Council Rationalisation are clearly desirable and achievable if they result in the optimisation of resources, including human, capital and revenue wealth. If they are merely used to identify surplus assets for disposal, then this will simply produce a one-off gain and not a long-term and sustained benefit.

10. We support the Treasury guide-lines for selling services outside Government to areas where they will result in a better service to the public and industry. We do not feel that a public enterprise acting in this way should have its activities restricted or its future blighted by a perceived need to privatisate the profitable parts of it. The enterprise as a whole shall be seen as a benefit to society, not just parts of it segregated along sectorial interest lines.

11. The Office of Science and Technology should continue to monitor oversight of the Open Market policy provided that this market is genuinely open to private and public enterprise alike. In this way, competition and market forces will be matched on a level playing field and not one which is tilted for the benefit of either player.

12. In conclusion, BRE is valued by the industry for its authoritative technical outputs, objectivity and independence of sectoral interests. Whatever changes are made, these features must be retained. Privatisation of elements of BRE could reduce the breadth of BRE's technical expertise and therefore its ability to handle multi-disciplinary issues (eg building on contaminated land). Complete privatisation as a profit making body would prejudice its perceived independence and objectivity. Evolution of BRE into an independent non-profit body funded by Government and industry may be possible in the longer term, but continuation of Government status, with freedom to develop its links with industry, is the preferable short-term option.

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